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Training School for Machine Operators

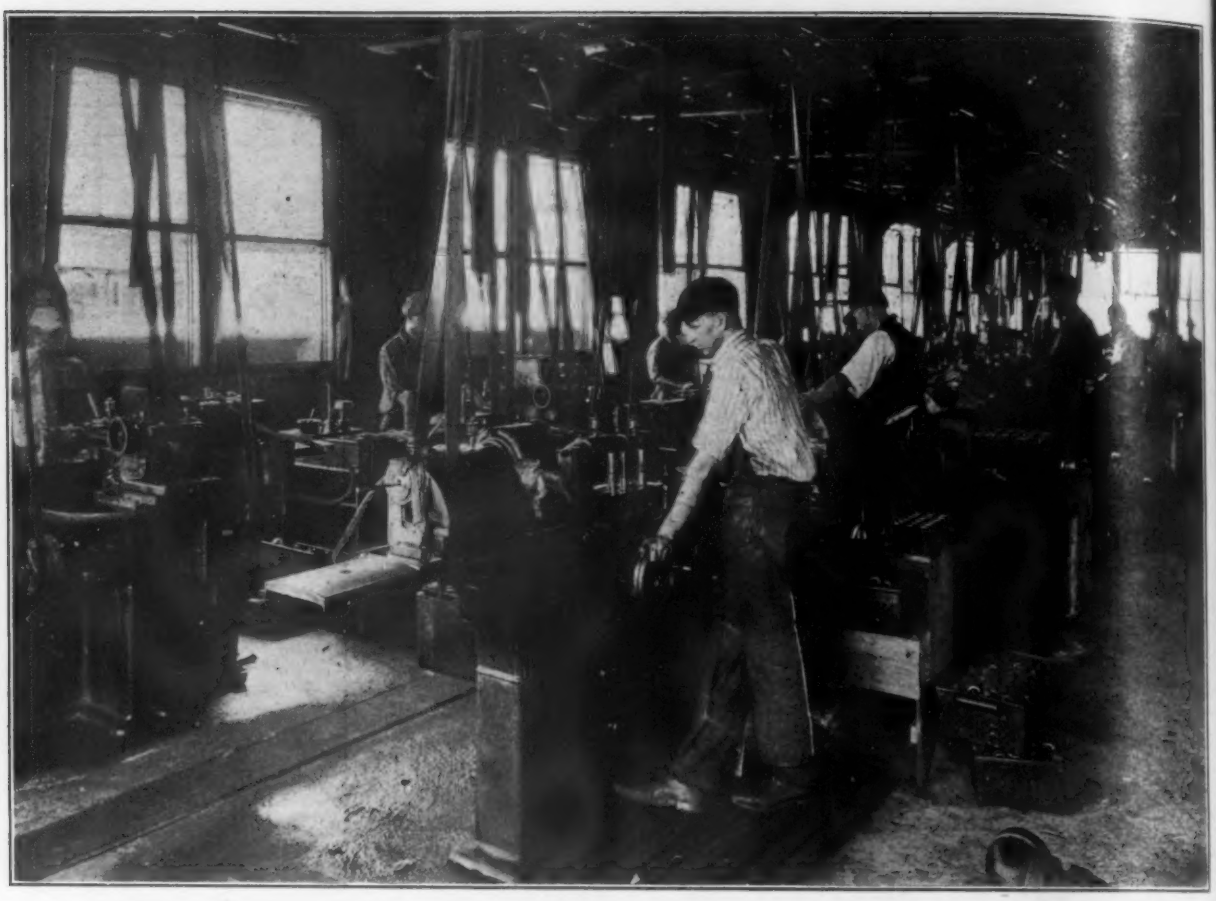
A Special Department Provided at the Timken Plant Gives Better Results Than Breaking In in Regular Departments

A TRAINING school for machine operators was recently established by the Timken Roller Bearing Co., Canton, Ohio, this company having decided that men could be trained better and quicker in a department provided for that purpose than by starting them at work in the regular manufacturing departments where a lack of skill on the part of new employees would have a tendency to keep production below the desired maximum. The purpose of the school is to give the new employees intensive training, make them competent machine operators at the earliest possible moment and eliminate partially trained men from the manufacturing departments.

The training school occupies a separate building, 60 x 80 ft., and is equipped with eight automatic screw machines and 15 grinding machines. Instruction is given only in the operation of these two types of machines as the greater part of the work in the company's plant is done on these machines. The policy of the employment department is to hire men who show indications of having the necessary qualifications to develop into good machine operators. Among those who have taken the training course are store clerks, other salesmen and men in other kinds of employment including intelligent men of foreign birth. As a rule, these students are men who have had no experience of any kind in machine shop work. No limit is placed on the ages of the men employed.

The school is in charge of three instructors, one on the automatic screw machines and a chief instructor and one assistant on the grinding machines. The instructors were selected from the most com-

Men Learning to Operate Automatic Screw Machines in a Special Training Department



Making Grinding Machine Operators Who Are Thoroughly Trained When Assigned to Regular Work

petent workmen as being apparently best fitted for the work of training others. The number of men taking the training course is from 20 to 25 at a time. The length of the training course is not fixed, the time a man is kept in the school depending on his ability to learn the work. It has been found in the four months that the school has been in operation that it takes three to four weeks for a man to become trained sufficiently in operating a grinding machine to be moved along to the regular production department. The course of training on an automatic screw machine requires about three months.

Men on starting at work in the training school are placed on the same hourly rate and premium wage basis as the experienced machine operators. While a night force is employed in the plant the training school is conducted only in the daytime during the regular 8-hr. shift. A production quota for each piece and machine for an 8-hr. period is scheduled throughout the plant and operators are paid a premium above the fixed quota whether they are working in the school or production departments. Some of the men in the school develop a speed that enables them to earn a premium above the hourly rate before being transferred to production departments. While the school has been in operation but a short time it is stated that the men who are given this intensive course of training are found better equipped for their work than they would be were they trained alongside of the workmen in the manufacturing departments.

New Government Safety Standards

Under the auspices of the U. S. Employers' Compensation Commission a survey by the American Museum of Safety and other well-known experts in various parts of the country, which has resulted in the appointment of some 20 safety engineers at various Government arsenals, navy yards and depots. One of the most significant pieces of work undertaken by the safety engineers, according to D. C. Rausch, assistant director American Museum of Safety, in his address before the iron and steel section of the National Safety Council Convention at St. Louis, Sept. 18, has been the creation of a set of Federal safety standards, soon to be published by the U. S. Bureau of Standards. They consist of a compilation from various sources and will tend, he believes, toward a unification of safety standards, a step now greatly neded in this country. A preliminary publication of them is being made in monthly installments in the publication of the American Museum of Safety. The result of the Government's safety plans is shown by the fact that under the present conditions the accident rate is 4.1 for 1000 workers, an average comparable with the results in industry generally.

Munitions Patent Board

WASHINGTON, Oct. 22.—To co-ordinate the policies of the War Department and the Navy Department in patent matters, the Secretary of War and the Secretary of the Navy have established the Munitions Patent Board. The membership of this board consists of Thomas Ewing, who has been jointly selected by the Secretary of War and the Secretary of the Navy; Max Thelen, the representative of the War Department, and Pickens Neagle, representing the Navy Department. The Munitions Patent Board has been formed to consider clauses in contracts of the respective departments dealing with patents; questions as to the validity or infringement of patents and the patentability of inventions; questions as to the amount of compensation to be paid for patents or for the use of patents, and all other miscellaneous questions as to patents which may arise in the two departments interested. The board is empowered to recommend, from time to time, to the Secretary of War and the Secretary of the Navy suitable action to be taken or policies to be adopted in regard to all patent matters which are brought before it for consideration.

Republicans Change Reconstruction Plan

Amendment by Senator Watson Provides for Appointment of Six Committees—Administration Opposed to Action at Present Time

WASHINGTON, Oct. 22.—Despite the growing acuteness of the peace crisis, Washington has taken no steps toward preparedness for peace. Nothing has yet been done to meet the overwhelming problems of reconstruction. Instead of accelerating a discussion by responsible leaders of the great questions which a sudden termination of the war might bring, there seems to be an emphasis in high circles upon the necessity for silence. The President himself, of course, has been too busy with the delicate subject of his peace conversations with Berlin. High officials around him, who will have to meet these questions when they arise, have opposed any discussion of them at the present time. Even Secretary McAdoo of the Treasury Department, and Chairman Baruch of the War Industries Board, have deprecated any approach to this great problem. They fear that its consideration at the present time might distract public attention from the great problem of intensifying our war work. President Wilson's discussions with Berlin, they seem to feel, have already had some effect in this way.

Because of this manifest disapproval by the Administration, Congress has made no progress in the consideration of the measures pending before it. The Senate Judiciary Committee has not even taken up the Overman bill, and Senator Overman has made no effort to press its discussion.

The Republican members of the Senate in the meantime have changed their reconstruction program by offering an amendment to Senator Weeks' resolution for a joint congressional committee on reconstruction. The amendment was drawn by Senators Watson of Indiana, Poindexter of Washington, and Cummins of Iowa, who were appointed by the Republican conference to manage the party's reconstruction plans in the Senate.

Instead of a single committee consisting of six members from each house, the new program provides for six committees, each one of which is to take care of a particular field of reconstruction—demobilization, foreign commerce, interstate transportation, domestic business, labor and natural resources.

Each of the committees is to be made up of five Senators and five Representatives to be selected by their respective houses in the same manner that standing committees now are made up. Each committee is to investigate the subjects specifically assigned to it and report to Congress, from time to time, its recommendations for legislation.

The names of the committees with the subjects to be assigned to each follow:

Demobilization of the Army and Navy: (a) The employment of discharged soldiers and sailors in civil pursuits; (b) the allotment of lands to returned soldiers and sailors and their establishment in homes upon the public domain; (c) all legislation which may be required in the proper care for those who have suffered the dangers of war, and especially those who have been disabled and whose ability to earn a livelihood has been impaired.

Foreign Trade and Commerce: (a) Duties on imports for the protection and encouragement of home industry; (b) the development of new markets; (c) combinations for the purpose of increasing our selling facilities; (d) changes in our banking facilities necessary to co-operate with such trade; (e) the supply and control of raw materials and encouragement in the production of articles that have heretofore been manufactured in this country; (f) our Merchant Marine, including the construction of ships, the continuance of Government ownership and operation; and in general with respect to the various problems of transportation upon the high seas.

Interstate Transportation: (a) The permanent relation which the Government of the United States should sustain to the common carriers of the country; (b) whether the systems of transportation now in possession of and being operated by the Government should be returned to their former owners and operated as heretofore, or whether Government operation should continue with or without Government ownership, or if private ownership is to continue and private operation resumed, what system of regulation and control will be best adapted to secure efficiency in service, reasonable rates of transportation and fairness to the capital invested; (c) the relation which should be established between inland water transportation and the railways, including the control of the former; (d) all questions relating to communication by wire.

Domestic Business: (a) To what extent, if any, should our laws relating to trusts and combinations be modified; (b) what co-operation should be permitted in order to increase efficiency, reduce cost and enable this country to successfully meet foreign competition; (c) to what extent should the Government undertake to control prices? (d) Government loans to private enterprises; (e) Government supervision of capital issues.

Employers and Employees: (a) Conciliation and arbitration in labor disputes; (b) the relation of men and women in similar employment; (c) substitution of female employees for male employees and vice versa; (d) the organization of permanent employment agencies; (e) the distribution of labor, including employment of surplus labor on public works; (f) the sanitary housing of employees and the disposition of houses constructed by the Government during the war; (g) the freedom of labor and of employment in its relation to trade unionism, and wages, hours and conditions of employment.

Natural Resources: (a) The encouragement of private enterprise in the development of the resources of the public domain; (b) the tendency toward urban population and the best means of checking it, including the requirements for farm labor and the best means of securing it; (c) Government loans to farmers; (d) the distribution of food products; (e) our timber problems; (f) the adequate production and proper distribution of our mineral resources, including coal, petroleum and other fuels; (g) the development and control of water power.

Each of these committees, under the proposed amendment, would be empowered "to take up and examine any other subject which, in the course of its investigation, it finds to be inseparably connected with the subjects herein assigned to it, and which ought to be considered in view of the change from the activities of war to the pursuits of peace, and especially the demobilization of war commissions, administrations, bureaus and other civilian agencies, and the adjustment of the forces employed therein to private industry and commerce under normal peace conditions."

W. L. C.

Stockholders of the E. J. Gardner Axle & Machine Co., East North Street, Carlisle, Pa., have voted to dissolve the company, owing to the scarcity of labor and difficulty in securing raw materials. The company, founded in 1883, is one of the oldest local industries. It is expected that the plant will be leased, a provision in the deed for the property making it mandatory to use the site for industrial purposes.

The Ferguson Iron & Steel Co., Buffalo, is preparing plans for an electric furnace building which it is to erect for the Norton Co., manufacturer of abrasives, at its Niagara Falls plant, Buffalo Avenue and Twenty-eighth Street.

IRON ORE MINED

Lake Superior District Produced 85 Per Cent of Total Last Year

Statistics compiled under the direction of E. F. Burchard of the United States Geological Survey, Department of the Interior, show that the iron ore mined in the United States in 1917 reached a total of 75,288,851 gross tons, and exceeded the former record output of 1916 by 121,179 tons. The shipments from the mines in 1917 were 75,573,181 gross tons, valued at $238,260,333, a decrease in quantity of 2,297,372 tons, or 2.95 per cent, and an increase in value of $56,358,056, or 30.98 per cent, as compared with shipments in 1916. The average value per ton at the mines for all grades of ore in 1917 was $3.15 as against $2.34 in 1916, an increase of nearly 35 per cent. Stocks of iron ore at mines, mainly in Minnesota and Michigan, amounted at the close of 1917 to 10,628,908 gross tons, compared with 10,876,352 gross tons in 1916.

Iron ore was mined in 25 States in 1917 and 24 in 1916. California, Montana and Nevada produced iron ore for metallurgic flux only; part of the output of Colorado, New Mexico and Utah was used for smelter flux and part for pig iron and ferroalloys; the remaining States produced iron ore mainly for use in blast furnaces, except small quantities used for paint from Michigan, New York, Wisconsin and Georgia. The ore output of Minnesota, Michigan and Alabama, States which have for many years produced the largest quantities of iron ore, was close to that of 1916, and more than 1,000,000 tons of ore was produced also by New York and Wisconsin.

Iron Ore Mined in the United States in 1916 and 1917, in Gross Tons

State	1916	1917	Per Cent of Change in 1917
Minnesota	44,585,422	44,595,232	+ 0.02
Michigan	18,071,016	17,868,601	— 1.1
Alabama	6,747,901	7,037,707	+ 4.3
New York	1,342,507	1,304,317	— 2.8
Wisconsin	1,304,518	1,202,235	— 7.8
Pennsylvania	559,431	546,700	— 2.3
Wyoming	545,774	543,846	— 0.4
Tennessee	455,834	508,529	+ 11.6
New Jersey	493,004	489,943	— 0.6
Virginia	440,492	469,908	+ 6.7
New Mexico	157,779	237,221	+ 50.4
Georgia	256,949	226,630	— 11.8
North Carolina	64,306	90,997	+ 41.5
Utah	45,514	48,058	+ 5.6
Missouri	34,914	38,908	+ 11.4
Iowa	11,351	22,612	+ 99.2
Maryland	4,455	11,830	+165.5
Massachusetts	(a)	10,000	
West Virginia	3,605	4,632	+ 28.5
California	3,000	2,207	— 26.4
Nevada	9,910	1,010	— 89.8
Arkansas	(a)	40	
Ohio	1,800	0	
Other States (b)	28,190	27,693	— 1.8
	75,167,672	75,288,851	+ 0.16

a Less than three producers in 1916, and permission not granted to publish State totals. Increase in 1917 therefore included in "Other States."

b 1916: Colorado, Connecticut and Massachusetts.
1917: Colorado, Connecticut and Montana.

The Lake Superior district mined nearly 85 per cent of the total ore in 1917, and the Birmingham district about 8 per cent. There were small decreases in output from the Lake Superior, Chattanooga and New York-New Jersey districts, and increases in the Birmingham and Adirondack districts, the production from the latter district having again exceeded 1,000,000 tons.

Eleven mines in the United States produced more than 1,000,000 tons of iron ore each in 1917, one less than in 1916. First place in 1917 was held by the Hull-Rust mine at Hibbing, Minn., the second place by the Red Mountain group near Bessemer, Ala., the third place by the Mahoning mine at Hibbing, Minn., and the fourth place by the Fayal mine at Eveleth, Minn. The production of these mines in 1917 was respectively,

Iron Ore Mined in the United States, by Mining Districts and Varieties, in 1917, in Gross Tons(a)

District	Hematite	Brown Ore	Magnetite	Carbonate	Total	Per Cent of Change in 1917
Lk. Sup'r b	63,481,321	.....	.....	..	63,481,321	—0.8
Birmingham	5,728,862	458,211	.....	..	6,187,073	+2.8
Chattanooga	544,023	277,462	.....	..	821,485	—1.1
Adirondack	.....	.....	1,100,001	..	1,100,001	+2.7
Northern New Jersey and southeastern New York	.....	(c)	(c)642,232	..	642,232	—0.9
Other dist's	d1,011,373	1,233,106	812,260	..	3,056,739	+6.1
	70,765,579	1,968,779	2,554,493	..	75,288,851	+0.16

a Exclusive of ore containing 5 per cent or more manganese.

b Includes only those mines in Wisconsin actually in the Lake Superior district.

c A small quantity of brown ore included in magnetite.

d A small quantity of brown ore included in hematite.

6,468,483, 2,955,022, 2,525,145 and 2,022,816 tons. The Hull-Rust mine which produced more than one-tenth of all the ore mined in 1916, decreased more than 1,000,000 tons in 1917. The output of the Fayal mine also decreased slightly, but the other two showed increases.

Lake Superior iron ore ranges.—Only two of the ranges in the Lake Superior district mined a larger quantity of iron ore in 1917 than in 1916, the Gogebic and Cuyuna ranges, the increase being 2.26 and 27.7 per cent, respectively. The output of the Cuyuna range nearly reached 2,000,000 tons.

Iron Ore(a) Mined in the Lake Superior Ranges(b) in 1916 and 1917

Range	1916 Gross Tons	1917 Gross Tons	Per Cent of Change in 1917
Marquette (Michigan)	4,792,987	4,638,374	— 3.2
Menominee (Michigan and Wisconsin)	6,649,578	6,366,483	— 4.3
Gogebic (Michigan and Wisconsin)	7,707,101	7,881,232	+ 2.3
Vermilion (Minnesota)	1,704,440	1,481,301	—13.0
Mesabi (Minnesota)	41,325,341	41,127,323	— 0.4
Cuyuna (Minnesota)	1,555,641	1,986,608	+27.7
	63,735,088	63,481,321	— 0.4

a Exclusive of ore containing 5 per cent or more manganese.

b Includes only such Wisconsin mines actually in the Lake Superior district.

Pig Iron Output Valued

The quantity of pig iron, exclusive of ferroalloys, sold or used in 1917, according to reports of producers to the United States Geological Survey, amounted to 38,612,546 gross tons, valued at $1,053,785,975, compared with 39,126,324 gross tons, valued at $663,478,118 in 1916, a decrease of 1.32 per cent in quantity and an increase of 59 per cent in value. The average price per ton at furnaces in 1917, as reported to the Survey, was $27.29, compared with $16.96 in 1916, an increase of 61 per cent. The production of pig iron, including ferroalloys, was 38,647,397 gross tons in 1917, compared with 39,434,797 gross tons in 1916, a decrease of 4.5 per cent, according to figures published by the American Iron and Steel Institute, March 18, 1918.

The Carnegie Steel Co. is rushing the construction of 50 houses at Steelton, Pa., to be rented to its foreign workers. The homes are of concrete construction, five and six rooms, and have all modern improvements. The original contract calls for fifty houses, but this number will probably be increased later.

Some War Problems of the Steel Trade

Postponed Demand, Wage Readjustment and Export Trade—A Tax on Sales as a Feature of the New Taxation Program

BY WILLIAM B. DICKSON*

As a result of the wide distribution of securities of steel companies in recent years the probable trade conditions in steel products after the war is a subject of wide general interest. The enormous demand for iron and steel products, due to war conditions, has brought about a great increase in the facilities for production. Probably the best measure of this tremendous expansion is the tonnage of ingots, which for the entire country has been as follows:

	Tons
1914	22,819,784
1915	31,284,212
1916	41,401,917
1917	42,800,000

At the conclusion of the war it would seem to be inevitable that some readjustment will be necessary, involving the closing down of the higher-cost plants. Such a contingency has probably been foreseen by the owners of most of these plants. In any event, the shock to business will not be relatively greater than those which have occurred in times of peace during the past fifteen years, and with our Federal Reserve banking system as a bulwark the general business community need have no fear of a serious financial crisis.

In view of the fact that so large a proportion of the steel capacity during the war is being devoted to Government needs, it would seem reasonable to suppose that domestic needs are being held in reserve. The steel required for the rehabilitation of railroads, including rolling stock, will in itself be an immense factor in steadying the situation, and there must be many other deferred domestic requirements which in the aggregate will provide a large tonnage to tide over the readjustment period.

The Labor Readjustment

Probably the most serious factor in this period of readjustment will be the restoration of labor rates to a level approximating those in force prior to the war. To accomplish this task with a minimum of hardship to wage earners and wage payers will require the most earnest, patriotic and unselfish efforts on the part of employers and wage earners.

The extent to which Europe will be a purchaser of our steel products after the war is difficult to forecast. There can be, of course, no question as to the great need for an immense outlay to restore pre-war conditions. The extent to which steel-producing facilities on the Continent have been destroyed by the combatants will also be a factor, but one which it is difficult at this time to measure.

On the one hand the huge burden of taxation which must be met by the nations of Europe would seem to preclude for a considerable period any great outlay beyond the bare necessities of existence. My own impression is that America should not count upon Europe as an important market for steel products for several years after the close of the war.

On the other hand, the neutral nations which have not been devastated by the war, and are free from the burden of war taxation, should afford an increasing field for the marketing of American steel products, and it is to them that we must look for an outlet for our surplus tonnage.

A Tax on Sales

The question of Federal taxation, both during and after the war, is highly important. The crying need of American business to-day is a clear, definite, simple Federal tax law. Business men generally appreciate the enormous amounts which must be raised by taxation in order to insure the triumph of American ideals, and they stand ready to meet this issue squarely, only asking that the burden be distributed fairly, and that the law be clearly expressed so that they will be able to calculate with reasonable certainty the amount of tax which they will be required to pay.

The principal source of Federal revenue, at least during the war, must, of course, come from income, profits, tariff and internal revenue taxes. I think some consideration, however, should be given to a tax on gross sales. The fundamental requirements of an ideal tax are:

Fairness.

Universality of incidence.

Ease of collection.

These three requirements are met by a tax on gross sales, providing, however, that all products and services the prices of which are regulated by law, such as those sold by public-utility corporations, are exempted from the operation of the law.

Such a tax is automatically passed along, from the producer of the raw material, and through each intermediate stage, until the whole accumulated tax is paid by the ultimate consumer.

For instance, the herdsman or farmer on a Western ranch sells a steer, and, knowing that he must pay a tax on the sale price, he adds it to the price which he receives. The butcher or packer sells the hide to the tanner, and charges a price which will absorb not only the tax which the herdsman had added, but that which the seller, in turn, must pay on the price obtained for the hide.

This sequence continues from tanner to wholesale leather merchant, shoe manufacturer, wholesale shoe dealer, retail shoe dealer, until finally the ultimate consumer, whether he be a banker or a laborer, pays the whole cumulative tax in the price of a pair of shoes, and that without realizing that he is doing so. This in itself, taking human psychology into account, is no inconsiderable advantage.

Every Consumer Becomes a Taxpayer

This formula applies to all other commodities, so that the entire social fabric becomes an automatic tax-collecting agency. This tax is therefore fair, in that it falls on every consumer in the exact proportion to the amount he spends. It is universal in its application, because all persons are of necessity consumers to some degree. It is easy of collection, because every dealer in services or commodities keeps a record of receipts, even if no other accounts are kept.

The exception noted above, of public-utility corporations, the prices of whose services or commodities are fixed by law, is, of course, necessary, because they

*Vice-president and treasurer Midvale Steel & Ordnance Co.

are unable to pass the burden to the ultimate consumer.

While the above would seem to demonstrate that a gross-sales tax is fair, of universality of incidence, and easy to collect, it does not necessarily follow that such a tax in itself forms a complete scheme of taxation. This is evident when it is considered that in many cases the personal expenditures of a man with a very large income and doing a large business may not differ materially from those of one of his clerks or workmen, and yet the proceeds from such a tax must come largely from such personal expenditures. As an instance, if the tales of the economies in personal expenditures of a former prominent New York financier, now deceased, are true, he would have paid less taxes than the average laboring man.

The plan of taxation here suggested is based on the theory that all expenditures which every individual must make in order to maintain himself as a natural person are a proper subject of taxation.

Consideration of the percentage rate of tax immediately takes us out of the realm of economics into that of politics. As pointed out above, however, it would be manifestly impracticable and unjust to attempt to make the sales tax a principal item in the Federal tax scheme. The inequalities between men, when you consider them as other than natural persons, must be equalized by the operation of the other taxes mentioned above.

It would seem, therefore, that this tax only meets the above mentioned fundamental requirements when it is considered as a supplemental form of taxation, and that especially in great crises like the present the nation must depend on other forms of taxation, such as income, profits, tariff and internal revenue taxes for the principal part of its resources.

DATA ON ELECTRIC DRIVES

Equipment, Power Consumption, Tonnage and Capacities of Mills of the Bethlehem Steel Co.

THE layout, equipment, power consumption, tonnages, and capacities of eleven electrically driven rolling mills at the Lehigh plant of the Bethlehem Steel Co., were discussed by J. T. Sturtevant, in a paper from which the following is taken, presented before the Association of Iron and Steel Electrical Engineers at its annual meeting in Baltimore, Sept. 11. The company's 10-in. merchant-bar mill was started up in July, 1915, and to April 30, 1918, had rolled 5077.8 tons of light file special size and shape stock at an average of 85.5 kw. hr. per ton. The drive on the mill has given practically no trouble except that crowding the mill at times has cut the brass thrust plates to such an extent that new plates had to be replaced and new oil placed in the bearing, this being the only case since installation that a change of oil was made. The monthly record of the mill is 1516.12 tons.

The 12-in. merchant-bar mill was started shortly after the 10-in. and has a monthly record of 3045.56 tons with a power consumption of 38.4 kw.hr. per ton. To this must be added 24.5 kw.hr. for the 16-in. roughing mill, which is a part of the 12-in. equipment, so that the 3045.56 tons of finished product was rolled from 5½ x 5½-in. stock at the rate of 62.9 kw.-hr. per ton. The roughing mill has a flywheel of 65840 lb.

The 8-in. merchant-bar mill up to six months ago gave some rotor trouble. Repeated breakdowns occurring between phases and to ground caused him to take oscillograms, which showed the cause and suggested the remedy. High peaks of the rotor voltage, which occurred when the primary circuit was opened and closed, were lessened when the control was arranged so that the secondary was closed before the primary and the primary was opened before the secondary. This was accomplished by closing the first contactor on the secondary panel, actuated by the speed switch, before closing the direction switch on the two-speed motors. The single-speed motors gave no trouble as the secondary was always closed. It was also found necessary to mount two contactors on all double-speed motors to short circuit the idle winding as high voltages in the idle winding were found to exist when starting or stopping.

For its 22-in. bar mill the maximum section bloom is 9 x 10 in. The record monthly tonnage is 15570.02 tons at the rate of 22.91 kw.hr. per ton. On this mill, he holds, is demonstrated the value of a balanced flywheel which takes the high power peaks on breaking down. Its 18-in. Morgan continuous mill driven by a 3000-hp. General Electric induction motor was started Jan., 1916, but up to the present time has not run to capacity due to shortage of steel. Its average power consumption is 28.5 kw.hr. per ton of steel.

He finds that motor houses over equipment of this kind aid in the upkeep of the motors and that, where it is possible to bring in fresh air from the outside through washing apparatus, a higher atmospheric pressure exists in the room which keeps most of the mill dirt out and so lessens the oxide covering which collects in the cracks and crevices around the winding.

Experience has taught him that new installations should have more attention in respect to flywheels. In this connection he referred to the 16-in. roughing mill which has an 800-hp. motor running at 100 r.p.m., the moment of inertia of the rotor being 210,000 lb. ft. To this was added 2,500,000 lb. ft. by the use of a flywheel, making a total of 2,710,000 lb. ft. Now work performed and service required have shown that on this layout a smaller motor would have done the work with power to spare and he feels safe in saying the 12-in. bar mill would have been more practical with a 500-hp. motor on the rougher whose flywheel moment of inertia would be about 2,700,000 lb. ft., and a 12-in. finishing-mill motor of 1000 hp. running at 214 to 167 r.p.m. with about 215,000 lb. ft. in the rotor. He advocates plenty of power for the finishing mill because of the heavy tonnages on flats and squares which, he says, are possible if the roll stands are kept fairly full.

New Manchurian Steel Works

Consul A. A. Williamson, at Dairen, Manchuria, has sent a report to the Department of Commerce of the progress on the new Japanese Anshan Steel Works, now being built by the South Manchuria Railway. These are two blast furnaces, which are scheduled for an annual output of 150,000 tons of pig iron. These furnaces are to be blown in next fall, but there will be delay in the steel plant. The location is midway between Chienshan and Lishan. Lishan is but a short distance from the Anshanchan iron field, which is to supply the necessary ore. The water supply is obtained in part from the Chienshan River but chiefly from a subterranean stream at the foot of Shoushan Hill.

Iron ore is to be supplied by the Chenhsing Mining Co. under Chino-Japanese joint management. It is to be mined from the eight mining districts of East and West Anshan, Hsiaolingtzu, Takushan, Kuannmenshan, Yingtaoyuan, and Wangchiaputzu. The ores consist of magnetite and hematite, both of excellent quality. In particular in Yingtaoyuan, East and West Anshan, and Takushan, outcrops of ore are common. The hills there may be called masses of iron ore. Consequently, mining can be carried on with great ease.

The H. Koppers Co., Pittsburgh, will erect an explosive plant for the Ordnance Department at 2101 Northlake Avenue, Seattle. The plant will consist of several buildings including a brick structure, 35 x 50-ft.; 15 large steel tanks on proper supports, necessary piping and pumping machinery and certain other equipment required in the manufacture of toluol. The completed plant will cost approximately $120,000.

Handling Machine Parts with a Magnet

The Cincinnati Planer Co. has recently put into operation on the overhead traveling crane in the stock yard at its Oakley plant a 36-in. lifting magnet made by the Electric Controller & Mfg. Co. This magnet can lift single castings weighing 20,000 lb., and it handles at one time a number of smaller castings such as boring mill housings, etc.

It is estimated that the saving in labor is approximately 60 per cent, as one principal feature in the use of the magnet is the elimination of swinging chains around under the castings or fastening hooks underneath them to lift and transport them where wanted. In eliminating this yard labor a somewhat vexing question has been solved, inasmuch as it is very difficult to employ men to work in a castings storage yard, where it is necessary for them to be exposed to all kinds of weather conditions, and also subjected to physical strain in handling castings. As the crane cage is fully inclosed, the crane operator can perform all the work, which heretofore was done by a crane operator and a number of ground men.

Another very important feature is the increased storage capacity of the castings yard secured by the use of the magnet, since it is found that the castings can be stacked in larger piles and closer together. It is also not necessary to have any aisles through the yard to move the castings from the yard into the shop, for the magnet and the crane transfer them over the piles. Castings can also be placed closer together for the reason that it is not necessary to leave sufficient space for a man to fasten the chain or hook around the piece to be handled.

When the magnet is not being used for handling castings it is employed for loading or storing borings and turnings. This class of scrap is transported from the shop in cars running on an industrial track and it is lifted by the magnet, either from the car or from the ground where the scrap has been dumped and loaded directly into a railroad car or transported to storage bins. This method of handling turnings has proved especially satisfactory because of the difficulty in loading this class of material in the usual way.

When it is necessary to weigh a casting, a crane scale is fastened to the hook on the crane and the magnet is then supported from the scale. The net weight of the casting is thus easily ascertained by two readings of the scale, one for the total weight and the other for the weight of the magnet only, which, of course, is deducted from the first.

The Use of a Lifting Magnet for Handling Parts in a Machine-Tool Builder's Stockyard Eliminates the Use of Chains and Hooks and the Accident Hazard to the Casting Itself as Well as the Workmen

Iron and Steel Imports of the Philippines

WASHINGTON, Oct. 22.—Imports of iron and steel by the Philippine Islands for the year ending June 30, 1918, more than doubled the figures for 1917, according to the detailed reports just issued by the Bureau of Insular Affairs of the War Department. Almost 90 per cent of these came from the United States.

The foreign commerce of the islands in the year ending June 30, 1918, broke all records and exceeded the figures of the previous year by more than 60 per cent in both imports and exports. The total imports of the islands for that year were $83,763,290 against $51,983,278 in the preceding year. The exports were $116,614,611 against $71,715,375 in the preceding year.

Of the imports the share of the United States in 1918 was $49,799,229 against $27,516,556 in 1917. Similarly, the bulk of the exports went to this country—$77,010,233 against $43,125,393 in 1917.

Under the heading of iron and steel imports, the machinery totals were $3,233,450 for the year ending June 30, 1918, against $1,453,447 in 1917. Of this the imports from the United States were $3,039,769 and $1,217,560 respectively. The other iron and steel imports were $6,071,093 in 1918 against $2,687,667 in 1917. Here the share of the United States was $5,265,800 and $2,102,027 respectively. Besides this, the Philippines imported in 1918 a total of 1646 automobiles valued at $1,278,675 against 1048 in 1917 valued at $750,063. All of these came from the United States.

The United States Housing Corporation will build at least 100 dwellings for the Government in Coraopolis, Pa., to house employees of the Neville Island gun and projectile plant now being built.

EMPLOYMENT OF WOMEN

Observations on the Experience in Four Metal Working Plants

Four factory and machine shop managers in as many different States—Ohio, New York, Connecticut and Massachusetts—recently recounted their experiences in the employment of women. Concerning the ready compliance of women with discipline, their aptitude for technical instruction within certain special limits, and of their devotion and care there was marked agreement in the testimony. In some cases the work was most capably conducted, even if of such a uniform repeating type as to seem monotonous to a repellent degree, or making such exacting demands upon attention and effort that the will power could not be expected to be sidetracked to millinery or dress.

There was general agreement in the statement that for women, in addition to the obvious and often quite expensive plant changes as to lavatories, rest rooms, etc., the instructors should be more patient and the instruction more thorough in application, accurately getting the woman's point of view and always assuming that she was much less completely informed than a man in regard to industrial apparatus and its uses for production.

The Cleveland manufacturer related an experience that was startling to him. At a time when the Government officials were hot upon his trail for greater and yet greater output, his shop force of women commenced to wane. This decrease in a very few days took some 200 women out of his plant.

Inquiries were begun forthwith. At first nothing was obtainable by way of satisfactory information to clear up the mystery. There was a singular and surprising reluctance about furnishing facts. Excuses were far more common than explanations; nobody seemed willing to go beyond an assertion of ignorance as to causes.

At last persistence was rewarded and the truth came out. A rumor had gone through the plant like an epidemic, starting without apparent cause, and wiping off the payroll the most valuable of the workers. It was merely this—that the company was soon to stop war work and would then discharge all female employees. This advice, given with great secrecy, spread with remarkable rapidity to everybody but the management.

When the manager took a hand himself in unearthing the particulars, he was exasperated and indignant that the trouble had gone on to such an extent as seriously to cut down output. That his most efficient workers had found it easier to make a change in employers than to ask a question that would have cleared up the whole situation was mortifying. He was convinced that the whole affair, whether or not it was so designed, was of a piece with pro-German propaganda.

The Brooklyn manager had had a far different case. Expert tool and die makers were becoming rare, and he decided it might be practicable to get a supply if women were properly trained to the work. Women have a natural deftness in hand work, so why was it not a perfectly feasible idea? A half dozen bright young women, one a technical graduate of very promising type, were selected, and the enterprise was put under way. Six months elapsed before the employer confessed himself beaten. Perhaps the trouble was that women are not trained in their school days as are men, nor do they as a rule take kindly to close measurements. Cupfuls and spoonfuls are rough modes of measuring, yet they are employed faithfully and with excellent results in kitchen labors, where micrometer methods would not serve nearly so well. Be that as it may, the manager aforesaid is still hunting for toolmakers.

A Hartford friend is also seeking toolmakers, but he has never had the courage to train women in that direction. It developed at his plant during the influenza period that women did not succumb to the malady as readily as men. He was in doubt whether the men gave up a little too easily after a stretch of strenuous shop operations or whether males had an actual predisposition to this enervating ailment; but the presumption is that if a man wants a vacation badly he would take one under more cheerful auspices.

A Worcester, Mass., manager decided that other things being equal, maturity should be given every chance to count in choosing women for employment. There are many evident advantages in the idea; one positive disadvantage has developed, and that is the disposition to lose time. Perhaps home cares are too engrossing. But the fact is that out of a group of some 50 women only two had failed in the preceding 30 days to be absent for periods extending all the way up to a hundred hours. This manager has much praise for the work done by women, but his latest experience has naturally given him less enthusiasm for the employment of older women of the home governing type.

R. I. C.

Larger Employment of Women in the Metal Trades

WASHINGTON, Oct. 22.—Employment of women in large numbers in the metal trades is regarded as entirely practicable by the National Industrial Conference Board. In a report on war-time employment of women in the metal trades the board asserts that employers generally commend women workers as more thorough and accurate than men. What they lose in quantity production, it was stated, is frequently made up by a higher quality of work.

The report summarizes information obtained from 131 establishments employing 335,015 men and 49,823 women. The investigation demonstrated that no extensive substitution of women for men has as yet taken place in the metal trades. Out of 96 establishments reported on substitution, only 10,801 women were employed on work formerly done exclusively by men, and of this number approximately one-half were in 10 munition plants. While the work done by women in the metal trades embraces a wide variety of occupation, they are found chiefly in the lighter forms of operation. The report emphasizes strongly that work of a repetitive character is specially suited to women.

In 66 out of 99 establishments where women and men were working at the same processes the average output of the women was as large as that of the men, and in many instances greater. In 15 establishments the production of women was lower than that of men, while in the remaining 18 it varied, depending upon different processes.

One automobile company which employed women in 23 departments assembling and inspecting materials and on many types of machine work asserted that job for job the women invariably outdistanced men. A gear manufacturing plant where women do sand blasting, grinding, drilling, and broaching stated that the production figures for women workers ran from 15 to 25 per cent above those of the men. Women operatives in a munition plant manufacturing fuses were from 25 to 50 per cent faster than men on drill presses and milling machines.

Women are credited with being more careful in the use of tools and with producing less spoiled work. "Whether technical training would make women the equal of men in work of higher character," the report observes, "cannot be determined from available sources. At present their lack of training automatically excludes them from highly skilled work."

In comparing wage scales in 106 establishments, it was found that the same rate for both prevailed in 53; in 29, piece rates were equal but women's time rates lower. But in 24 establishments employers were enforcing a lower pay for women in piece and time work alike. In 84 of 115 establishments the attendance of women was equal or better than that of men. Attendance of married women was as good as that of unmarried girls.

Manufacturers in the metal trades have found no lack of women applicants for positions. Most of the

workers are drawn from other industries, or from department stores, offices, restaurants, laundries, or domestic service. Whether they would continue to come into this employment after the war and under less pressing conditions was a question on which employers themselves were divided in opinion, although it was generally felt they would remain in the lighter grades of work.

Book Reviews

Exporters' Encyclopaedia for 1918-19. Pages xvi + 1331, 5½ x 7⅞ in. Published by the Exporters Encyclopaedia Company, 80 Broad Street, New York. Price, $8.50, including monthly corrections and Exporters' Review.

The fourteenth edition of this export shippers guide contains the same wealth of information as the previous edition, with changeable data brought as nearly as possible up to date. The index of subjects contained is so extensive as to make its reprint here prohibitive. The area, population, commerce and products of each country are given, as well as such information as points through which bills of lading are issued, shipping routes, cable tolls, consular charges and regulations, coinage conversion tables, location of consulates, banks and bankers in foreign trade, collection of drafts, distances, duties, packing, forwarding, freight rates, etc. The book continues to be highly indorsed by transportation lines, export houses, forwarders and manufacturers.

The Exporters' Review with correction sheets, mailed monthly to purchasers of the book, is of special value to export shippers in that it keeps them in touch with all matters relating to the export trade.

The Arbitral Determination of Railway Wages. By J. Noble Stokett, Jr. Pages xxv + 198, 5 x 7⅞ in. Published by Houghton, Mifflin Co., 4 Park Street, Boston, Mass. Price, $1.50.

It is the author's purpose in this book to establish some fundamental principles which may govern the determination of wages, not only in railroad arbitration but also in the settlement of disputes including employees in other industries. In the introduction the author shows that the possibilities of arbitration have not been realized on account of the use of the principle of comparison in arriving at wage awards. In the chapters on standardization, the living wage, increased cost of living and increased production efficiency is presented a study of these four general principles of wage determination and of wage increase advanced by employees and employers in the course of railroad arbitration proceedings. From this study, in the final chapter, the author deduces definite "Principles of Arbitration" which are advanced in the belief that their application will make for fair and enduring decisions.

The book is of value not only to students of this branch of economics but to anyone desirous of obtaining a better understanding of the principles involved in wage disputes.

Fuel Economy in Boiler Rooms. By A. R. Maujer and Charles M. Bromley. Pages xiii + 308, 5½ x 8 in.; numerous illustrations, charts and tables. Published by the McGraw-Hill Book Co., 239 West Thirty-ninth Street, New York, and for sale by The Iron Age book department. Price, $2.50.

This book was originally published under the title "Fuel Economy and CO_2 Recorders," but in this second edition, the scope has been broadened and the title changed to one more truly indicative of the contents. The book is divided into two parts. Part I, "Fuel Economy and CO_2 Recorders" covers combustion, coal analysis, flue gas analysis, calculations involved in determining boiler efficiency, feedwater treatment, etc. Part II, "Fuel Economy in Boiler Rooms" includes fuels, firing methods, combustion of coal from the practical standpoint, fuel oil burning, stoker operation, boiler settings, burning low grade fuels and waste gases, ready means of checking boiler efficiency, etc.

The subjects are well presented, easily understandable, and aim to give the practical man a sound understanding of the principles involved. The book is intended primarily for the student but the fireman and power plant operator will find it useful.

A booklet on "Women In Industry" has been prepared and published by the Alexander Hamilton Institute, New York. The booklet is the result of a study of conditions in England and France as well as in the United States and is a comprehensive and practical analysis of the labor problem in America from the standpoint of its absorption of women. It discusses what work women are capable of and are already successfully doing and covers the matter of their training, the hours they should work and the method used for keeping them happy, healthy and efficient. The booklet is of particular value at this time.

"Mortality from Respiratory Diseases in Dusty Trades" by Frederick L. Hoffman, is the title of Bulletin 231 issued by the United States Bureau of Labor Statistics. Occupations are considered in detail in which the worker is exposed to continuous and considerable inhallations of metallic and mineral or other inorganic fiber dust and in which the evidence is at least fairly conclusive that the resulting disease liability and mortality from tuberculosis and other respiratory diseases is above the average for occupied males generally. Under each occupation is given a description of the process relative to health hazards, diseases associated therewith, mortality status, and preventable measures. The purpose of the publication is to overcome the present apathy and indifference to the urgency of necessary changes and reforms and to arouse the early conviction that regulations of these industries is a National and State labor problem of the first order in practical importance.

The principal hazards of the freight elevator and how they may be removed is the theme in a pamphlet "Freight Elevators" issued by the National Safety Council. Shaftway enclosures, landing doors and gates, pits, penthouses, cars, cables and counterweights, machine control and safety devices, inspection, and suggested rules for elevator operators include the headings of the various sections. A clear understanding of the subject is made possible with the aid of numerous illustrations. Copies can be obtained at 10 cents apiece by addressing the National Safety Council, 208 South La Salle Street, Chicago.

Fabricated Steel Business in September

The amount of fabricated steel business done in September involved about 108,000 tons, or 5500 tons more than in August. This is indicated by the records of the Bridge Builders and Structural Society, collected by George E. Gifford, its secretary, which are, that in September 60 per cent of the entire capacity of bridge and structural shops of the country was put under contract.

The total so far this year is 1,024,000 tons, which compares with 831,500 tons for the first nine months of 1917. The last three months of 1917 saw a large amount of contracting on account of the fabricated ship program, and the total of 1917 was about 1,286,000 tons, so that the rate of contracting for the remainder of this year to equal the 1917 business need not be more than 88,000 tons per month. To equal the 1915 or the 1916 volume of business, which was substantially equal for the two years, amounting to 1,488,000 tons, the monthly business for the remaining three months of the year would have to average about 150,000 tons, or 85 per cent of capacity.

The National Chain Co., 30 East Forty-second Street, New York, has increased its capital from $80,000 to $150,000. The company operates a plant at College Point, L. I.

Bethlehem Plan of Employee Representation

Monthly Committee Meetings and Annual Conferences to Consider Wages, Working Conditions, Housing and All Other Questions of Mutual Interest

BELOW is given the scheme of organization adopted by the Bethlehem Steel Corporation for the system of employee representation recently announced by the company. It will be studied with interest not only by steel manufacturers but by other employers in the lines represented by THE IRON AGE. It is noteworthy, in view of the attitude many manufacturers of iron and steel have taken toward labor unions, that the Bethlehem Steel Corporation expressly concedes the right of employees to belong to unions. This is stated in the following "principles of representation" which are printed as a preface to the pamphlet containing the details of organization:

"In order to give the employees of the company a voice in regard to the conditions under which they labor, and to provide an orderly and expeditious procedure for the prevention and adjustment of any future differences, and to anticipate the problem of continuous employment as it will present itself through trade fluctuations and other conditions at the termination of the war, a method of representation of employees is to be established.

"The representation of employees, as hereinafter provided, shall in no way abridge or conflict with the right of employees to belong to labor unions."

The full text of the pamphlet just issued by the company outlining its new plan is as follows:

I.—Representation.

1. Representation shall be on the following basis:

Plants employing under 1500 employees: One representative for each 100 employees.

Plants employing 1500 to 10,000 employees: One representative for each 200 employees.

Plants employing over 10,000 employees: One representative for each 300 employees; provided, however, that in no case there shall be less than 10 representatives.

Such adjustments as may be necessary to meet special cases shall be made.

2. For the purpose of applying the unit of representation, the plants should be subdivided according to departments and natural subdivisions. Wherever it is necessary to group a number of small departments in order to complete a unit of representation, regard shall be had to logical groupings and location.

3. Adjustments in units of representation shall be made in accordance with the recommendations of the Committee on Rules.

II.—Terms of Representatives.

1. Representatives shall be elected for a term of one year, and shall be eligible for re-election.

2. A representative may be recalled upon the approval by the Committee on Rules of a petition signed by two-thirds of the voters in his department.

3. A representative shall be deemed to have vacated office upon severance of his relations with the company or upon his appointment to such a regular position as would bring him within the meaning of Paragraph 3, Section 3, entitled "Qualifications of Representatives and Voters."

4. Vacancies in the office of representative may be filled, in the discretion of the Committee on Rules, by special elections conducted in the same manner as the general elections.

III.—Qualifications of Representatives and Voters.

1. Any employee who has been on the company's pay rolls for a period of six months prior to nominations, who is 21 years of age and over, and who is an American citizen or has taken out his first papers, shall be considered qualified for nomination and election as a representative.

2. All employees who have been on the company's pay rolls for a period of at least sixty (60) days prior to the date fixed for nominations, and who are 18 years of age of over shall be entitled to vote; provided, however, that in the case of the first elections, thirty (30) days on the company's pay rolls shall suffice.

3. Company officials and persons having the right to hire or discharge shall not be eligible as representatives or qualified to vote for representatives.

IV.—First Nominations and Elections.

1. Each division or department shall select a committee of the workmen who shall conduct the first nominations and elections in the manner prescribed herein.

2. At the first elections the full number of representatives shall be elected, one-half of whom shall serve until the second stated semi-annual election thereafter, and one-half of whom shall retire at the first stated semi-annual election. The method of retirement of representatives shall be arranged by the Joint Committee on Rules.

V.—Nominations and Elections After the First Nominations and Elections.

1. Nominations and elections shall be held semi-annually, in the months of October and April respectively.

2. Nominations shall be held on the second Monday, and elections on the following Friday, of the months named. In the event of either of these days being a holiday, the day immediately following shall be substituted.

3. One-half of the total number of representatives shall be chosen at each semi-annual election.

4. The nominations and elections (after the first nominations and elections) shall be conducted by the employees themselves, in accordance with rules and regulations prescribed by the Committee on Rules, with only such assistance from the management as may be required by the Committee on Rules.

5. There shall be three persons nominated for every person to be elected.

6. Nominations and elections shall be by secret ballot, and so conducted as to avoid undue influence or interference with voters in any manner whatsoever, and to prevent any fraud in the counting of ballots.

7. On the day of nominations, each duly qualified voter shall be furnished with a ballot stating the number of persons for whom he is entitled to vote, on which he shall write the name of the persons in his department whom he desires to nominate as representatives.

8. A voter may place in nomination twice the number of representatives to which his department is entitled.

9. If on any ballot the same name is placed in nomination more than once, it shall be counted but once.

10. Should the number of persons nominated on any ballot exceed the permitted number as stated on the ballot, the ballot shall be void.

11. Those who have received the largest number of votes up to three times the number of representatives to be elected shall be declared nominated, and shall be candidates for election.

12. On the day of elections, each duly qualified voter shall be furnished by the Committee on Rules with a ballot on which the names of the candidates shall be printed in alphabetical order. The voter shall indicate his preference by placing a cross (X) opposite the names of the candidates of his choice.

13. Candidates to the number of representatives to which a department or subdivision is entitled may be voted for and this number shall be stated on the ballot. If this number is exceeded, the ballot shall be void.

14. Each voter shall deposit his own ballot in a box provided for the purpose by the Committee on Rules, and the ballots shall be counted under the direction and supervision of said committee. The candidates receiving the highest number of votes shall be declared elected.

15. In the event of a tie, senority in the company's employment shall determine the choice.

16. In the event of a controversy arising concerning any nomination or election, it shall be referred to and decided by the Committee on Rules.

17. The Committee on Rules may make such provision as they may consider necessary for assisting any voter, who may so request, in properly marking his ballot.

VI.—Management's Representative.

The company shall appoint a management's representative.

The management's representative shall keep the management in touch with the representatives, and represent the

management in negotiations with the representatives, their officers and committees. He shall respond promptly to any request from representatives, and shall interview all of the representatives, from time to time, but not less frequently than once every month, with reference to matters of concern to employees, and report the result of such interviews to the management.

VII.—Committees.

1. After each semi-annual election, the representatives shall immediately meet for the purpose of electing a chairman, secretary, a General Committee, and Committee on Rules, and for selecting members of such other committees as are found necessary by the Committee on Rules for the consideration of the following subjects:

Rules.
Ways and Means.
Safety and Prevention of Accident.
Practice, Methods and Economy.
Employees' Transportation.
Wages, Piece Work, Bonus and Tonnage Schedules.
Employment and Working Conditions.
Housing, Domestic Economies and Living Conditions.
Health and Works Sanitation.
Education and Publications.
Pensions and Relief.
Athletics and Recreation.
Continuous Employment and Condition of Industry.

2. There shall be a General Committee to consider all matters not falling within the scope of any other committees herein provided for and the chairman and secretary of the representatives shall be members of the General Committee. This committee when jointly composed shall act as a Committee on Appeals.

3. Each committee shall be composed of five members, and shall appoint its own chairman and secretary.

4. Vacancies on committees shall be filled at a regular meeting of the representatives.

5. Joint committees shall consist of the committees of the employees' representatives with the addition of the company's representatives named by the management, who may equal but shall not exceed in number the employees' representatives.

6. The joint committees shall select their own officers and arrange their own procedure, subject to appeal, in case of controversy, to the Joint Committee on Rules.

7. Wherever the word "committee" is used throughout this instrument, it shall mean the separate Committee of Employees' Representatives unless a "joint committee" is specified.

VIII.—Committee Meetings.

1. Regular meetings of committees shall be held once a month.

2. On alternate months, the committees shall meet as joint committees.

3. Committees shall meet between the hours of 3 and 5 in the afternoon, unless otherwise arranged for on joint approval of the chairman of the employees' representatives and the management's representative.

4. Special meetings of committees and of joint committees may be held as occasion may require, on approval of the chairman of the employees' representatives and the management's representative.

5. For time necessarily occupied in actual attendance at regular meetings or at special meetings of conferences jointly approved, representatives shall receive from the company payment commensurate with their average earnings.

6. Representatives shall have the right to appear before and be heard by a committee on any matter of concern to the employees of the department they represent.

7. A committee, when concerned with matters of special interest to any particular department or class of employees, shall have the right of inviting into conference the representatives of the employees and of the management likely to be specially interested in such matters.

8. Any matter may be referred by the management through the management's representative to any committee for consideration and report, and any matter may be presented by a committee to the management through the management's representative.

9. The Joint Committee on Rules shall arrange a suitable place for meetings of the representatives, and of the several committees and joint committees, and the company shall defray such expenses as are necessarily incident to the discharge of duties herein set forth, when approved by a majority of said committee.

IX.—Annual Conference

An annual conference between all of the employees' representatives and representatives of the management shall be held at a time and place determined by the Joint Rules Committee, who shall be in charge of the procedure at such conference.

X.—Procedure for Adjustments.

1. Any matter which in the opinion of any employee requires adjustment, and which such employee has been unable to adjust with the foreman of the work on which he is engaged, may be taken up by such employee, either in person or through any representative of his department.

First—With the superintendent of the department.

Second—With the management's representative.

Third—With one of the superior officers of the company, who shall endeavor to effect a settlement, or who may with the approval of all the parties refer the matter to any Joint Committee.

2. Unless a satisfactory disposition of any such matter has been effected within a reasonable time, any employee through his representative, or the management through the management's representative, may require such matter to be referred to the General Joint Committee on Appeals by a request in writing addressed to said committee, specifying in detail the matter requiring adjustment and the reasons which warrant its consideration by said committee. The General

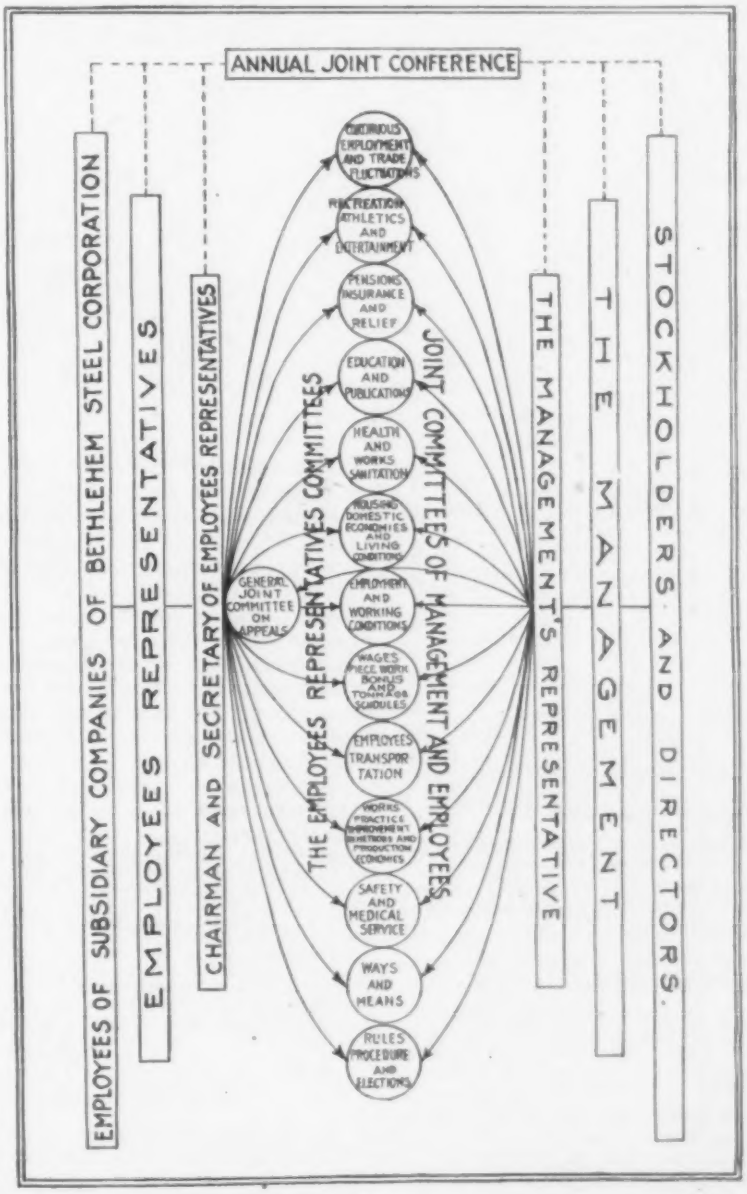

ANNUAL JOINT CONFERENCE
EMPLOYEES OF SUBSIDIARY COMPANIES OF BETHLEHEM STEEL CORPORATION
EMPLOYEES REPRESENTATIVES
CHAIRMAN AND SECRETARY OF EMPLOYEES REPRESENTATIVES
THE EMPLOYEES REPRESENTATIVES COMMITTEES
JOINT COMMITTEES OF MANAGEMENT AND EMPLOYEES
THE MANAGEMENT'S REPRESENTATIVE
THE MANAGEMENT
STOCKHOLDERS AND DIRECTORS.
GENERAL JOINT COMMITTEE ON APPEALS
CONTINUOUS EMPLOYMENT AND TRADE FLUCTUATIONS
RECREATION ATHLETICS AND ENTERTAINMENT
PENSIONS INSURANCE AND RELIEF
EDUCATION AND PUBLICATIONS
HEALTH AND WORKS SANITATION
HOUSING DOMESTIC ECONOMIES AND LIVING CONDITIONS
EMPLOYMENT AND WORKING CONDITIONS
WAGES PIECE WORK BONUS AND TONNAGE SCHEDULES
EMPLOYEES TRANSPORTATION
WORKS PRACTICE IMPROVEMENT METHODS AND PRODUCTION ECONOMIES
SAFETY AND MEDICAL SERVICE
WAYS AND MEANS
RULES PROCEDURE AND ELECTIONS

Chart Illustrative of Representation of Employees of the Bethlehem Steel Corporation and Subsidiary Companies

Joint Committee on Appeals shall consider any such matter with reasonable promptness, at a regular or special meeting, and may adopt such means as are necessary to ascertain the facts and effect a settlement.

3. If the General Joint Committee on Appeals fail to effect a satisfactory settlement, the president of the company shall be notified and the matter may be referred, if the president and a majority of the employees' representatives on the General Joint Committee agree to such reference, to an arbitrator or arbitrators, to be determined at the time according to the nature of the controversy.

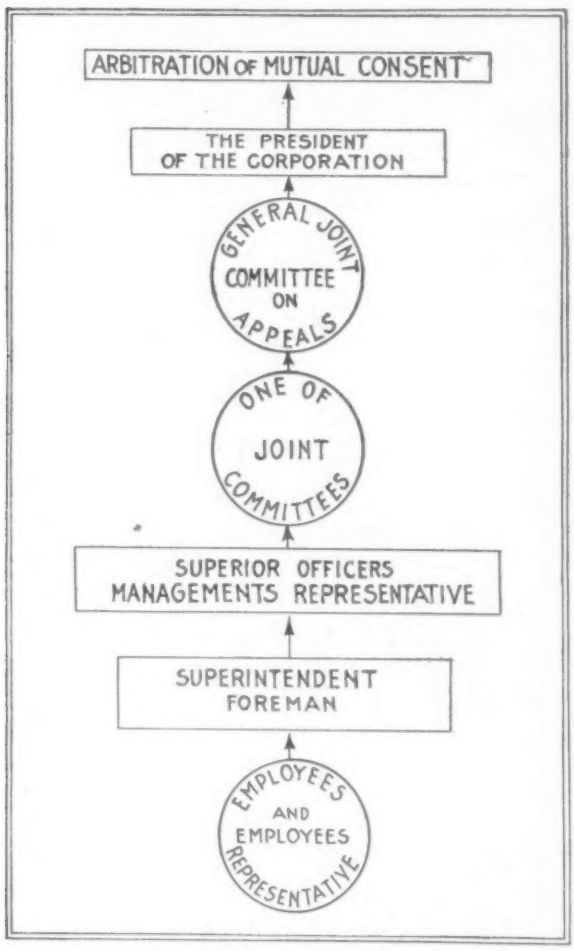

ARBITRATION OF MUTUAL CONSENT
THE PRESIDENT OF THE CORPORATION
GENERAL JOINT COMMITTEE ON APPEALS
ONE OF JOINT COMMITTEES
SUPERIOR OFFICERS MANAGEMENTS REPRESENTATIVE
SUPERINTENDENT FOREMAN
EMPLOYEES AND EMPLOYEES REPRESENTATIVE

Chart Illustrative of Procedure in the Adjustment of Matters Arising for Settlement

XI.—Guaranteeing the Independence of Representatives.

It is understood and agreed that each representative shall be free to discharge his duties in an independent manner, without fear that his individual relations with the company may be affected in the least degree by any action taken by him in good faith in his representative capacity.

To insure to each representative his right to such independent action, he shall have the right to take the question of an alleged personal discrimination against him, on account of his acts in his representative capacity, to any of the superior officers, to the General Joint Committee and to the president of the company.

Having exercised this right in the consecutive order indicated and failing a satisfactory remedy within thirty days, a representative shall have the further right to appeal to the State Department of Labor or the Secretary of Labor of the United States. The company shall furnish the said Secretary or the said State Department of Labor with every facility for the determination of the facts, and the findings and recommendations of the said Secretary or the State Department of Labor shall be final and binding.

XII.—Amendments

Any method of procedure hereunder may be amended at any time by two-thirds vote of the entire membership of the Joint Committee on Rules, or by concurrent majority vote of the employees' representatives and of the representatives of the management at an annual conference.

The Clear Creek Mining & Development Corporation has been incorporated at St. Louis to mine iron and lead and to operate mills and smelters.

New England Industries Seriously Affected by Influenza

NEW HAVEN, Oct. 23.—Influenza continues to interfere very seriously with the output of machine shops and foundries in this section. Particularly in southern New England, has there been a widespread checking of the industries. Hope that the peak of the epidemic has passed is freely heard, but perhaps all that can be said with confidence is that there is a better control and use of preventative measures now established and this is having due effect upon the flood of new cases, though the ebb of this grave affliction is not very evident.

Intensive methods of inducing women to apply for war work in the munition shops have produced such substantial success in Bridgeport that the same plans are to be applied elsewhere in Connecticut. While at Bridgeport the registrations were once about 25 weekly, the official figures of recent date show striking increases. For example, the registrations for the week Sept. 7 were 99; Sept. 14, 120; Sept. 21, 352; Sept. 28, 736; Oct. 5, 546; Oct. 12, 492.

Of the growing employment of women in the industries of New England, there is shown by the recently issued statistics of the State Industrial Commissioner, R. W. Simonds, that in Vermont twice as many women are employed as there were two years ago, not including women who have supplied places in offices formerly held by women.

Importation of Tin and Graphite

WASHINGTON, Oct. 22.—The War Trade Board has introduced restrictions on the importation of tin in order to give effect to the regulation of the distribution of tin and tin ores, concentrates and derivatives under the Tin Executive recently established in London. All outstanding licenses for the importation of pig tin, tin ore and tin concentrates, or any chemical extracted therefrom, have been revoked as to ocean shipment from abroad after Oct. 20, 1918. Hereafter no licenses will be issued for the importation of these commodities except to cover shipments consigned to the United States Steel Products Co.

The board has modified the earlier restriction upon the importation of graphite (plumbago). The new ruling reads:

No licenses for the importation of amorphous graphite (plumbago) shall be issued hereafter, except such shipments as are of Canadian origin and come overland or by lake from Canada, or of Mexican origin and come overland from Mexico. Licenses may be issued for the importation of graphite of crucible grade when the applications therefor are otherwise in order, and where the Chemical Section of the War Industries Board has approved the issuance of said license, and has certified that the ultimate consumers of the said graphite have been using at least 20 per cent of domestic or Canadian flake graphite in the manufacture of their products.

Pacific Coast Steel Co.'s Plant

Initial steps toward the actual construction of the Pacific Coast Steel Co.'s $700,000 steel rolling mills in Portland, Ore., were taken recently when William Pigott, Seattle, signed a contract with the Grant Smith Co., Seattle, for erecting the buildings. The contract calls for installation of machinery which has already been ordered from the East. The first structures will be the 100 x 300-ft. mill and 100 x 200-ft. open-hearth buildings. The plant is expected to be in operation by June 1, 1919, and will employ about 2350 men at the start. The capacity of the plant will be about 250 tons daily. All manner of steel for ships, plates excepted, will be turned out. The company recently purchased a 32-acre tract on the west side of the Willamette River, between Portland and Linnton. At that time it was said building operations would begin very soon.

The Mayer & Clarkson Co., Ellicott Square Building, Buffalo, has filed application with the City Council for the construction of a steel mill for cold rolling, 100 x 250 ft., at Comet Avenue and the Erie Railroad. A. L. Mayer is president.

Work of the National Research Council*

Its Status and War Organization—Standardizing Steel Ingot Practice—New Pyrometer for Steel Temperatures —Work on Fatiguing Metals and on Manganese

BY HENRY M. HOWE

THE purpose of the National Research Council as organized for war purposes is twofold, to stimulate those outside its own personnel to conduct researches of importance for winning the war, and to carry on such researches through its personnel to a limited extent. The need of this work arises from the inevitable concentration of most of the Governmental war agencies on the immediate work of producing and transporting war materials of the types now adopted, as distinguished from the devising of new kinds of instrumentalities, such as armor, guns, aircraft, and apparatus for detecting, locating, observing, signalling, transporting and many other military purposes. But the need of devising and creating new instrumentalities is urgent. The war came near being won by an invention, the submarine, and its course has been affected greatly by two other inventions, tanks and aircraft. In spite of our numerical superiority, victory may well be snatched from us by an invention, if we allow Germany to outstrip us in inventing. Hence the importance of the Council's work in mobilizing and organizing the services of the patriotic civilian experts throughout the country, so as to bring their powers to bear on important war problems and on inventing war devices, as an adjunct to the development work of the regular Governmental bodies.

Its Status and War Organization

Though President Wilson's request caused the Council to be created by the National Academy of Sciences under its congressional charter in 1916; though his executive order of May 11, 1918, directs the heads of "Governmental departments immediately concerned" to "continue to co-operate with it in every way that may be required," and though he has contributed largely to its financial support (Section 12, page 10), it is not a department of the Government but an independent research body. This freedom from Governmental control is valued greatly because it enables us to evolve the necessary mechanism for this novel work of systematic stimulation and guidance of research, unhampered by statutory limitations, which would be as inappropriate to this process of evolution as to any work of invention or of imaginative creation. Thus the Government which instigated the creation of the Council recognizes and collaborates with it and in part supports it, but does not control it.

The war organization consists of nine divisions, as follows:

Division of General Relations.
Military Division.
Division of Engineering.
Division of Physics, Mathematics, Astronomy and Geophysics.
Division of Chemistry and Chemical Technology.
Division of Geology and Geography.
Division of Medicine and Related Sciences.
Division of Agriculture, Botany, Forestry, Zoology and Fisheries.
Research Information Service.

The organization of the Engineering Division is made up of four sections, which are given below. These are directed by an executive committee consisting of the chairman of the division and of the four sections.

1. Prime movers, L. S. Marks, chairman.
2. Mechanical engineering, W. J. Lester, chairman.
   Committee:
   Fatigue of metals, Prof. H. F. Moore, chairman.
3. Metallurgy, Bradley Stoughton, chairman.
   Committee:
   Helmets and body armor, Major Bashford Dean, chairman.
   Ferroalloys, J. E. Johnson, Jr., chairman.
   Steel ingots, Col. W. P. Barba, chairman.
   Pyrometers, George K. Burgess, chairman.
   Improvement of metals by treatment at a blue heat, Zay Jeffries, chairman.
4. Electrical engineering, C. A. Adams, chairman.
   Committee jointly under metallurgy and electric engineering; electric welding of ships, H. M. Hobart, chairman.

In addition there is an advisory committee consisting of:

Pope Yeatman,	Officially representing the	War Industries Board.
Van H. Manning,		U. S. Bureau of Mines.
D. W. Brunton,		Naval Consulting Board.
Ambrose Swasey,		Engineering Foundation.
George S. Webster,		American Society of Civil Eng.
Philip N. Moore,		American Inst. of Mining Eng.
John R. Freeman,		American Society of Mech. Eng.
C. A. Adams,		American Inst. of Elec. Eng.
A. A. Stevenson,		American Society of Test. Mater.
W. B. Price,		American Institute of Metals.

With W. H. Burr, Gano Dunn, George C. Stone, W. R. Walker, F. M. Waring, Members at large.

The advisory committee meets at intervals to direct the general policy of the division. All the other committees are actively engaged on their several problems.

The sources of our problems are very varied. Some come from various Governmental bodies, some from the industries and the engineering societies, inventors and the general public, and some from our own staff.

Researches by Experts Outside of Our Personnel

Let me illustrate the question of researches by outside experts by means of certain researches which the section of metallurgy has in hand.

Standard Steel Ingot Practice

The winning of the war is retarded appreciably by the delay caused by the rejections in making certain important kinds of forgings, such as shells, crankshafts, cannon, etc. These rejections are due chiefly to faulty procedure in making and forging the steel ingots themselves. The faultiness exists because the rapid increase in the demand for such ingots has led many into this manufacture without sufficient experience. The problem thus is "How can we bring the procedure of the relatively inexperienced up to that of the best makers?"

We are trying to solve it by means of our steel ingot committee, made up of men who are recognized by all as among the most capable experts on this subject in the world, under the chairmanship of Lieut.-Col. W. P. Barba, himself one of the highest authorities in these matters. It contains representatives of the ordnance department, the U. S. Bureau of Standards and of Mines, the Bethlehem and Midvale steel companies, the United States Steel Corporation, the Illinois Steel Co., the Crucible Steel Co. of America, and the Standard Steel Co. We hope to strengthen this committee still further by adding to it French and British experts of like eminence.

We expect this committee to prepare a set of detailed directions constituting "Recommended Practice." Appearing over names of such weight it should imme-

*From a report read at the meeting of the Iron and Steel Section of the American Institute of Mining Engineers at Milwaukee, Oct. 9, 1918. The author is chairman, engineering division, National Research Council.

diately become standard. Its existence should not only instruct the manufacturers needing instruction, thus reducing the personal equation to a minimum, but also strengthen the hands of both of those drawing up contracts and of the inspectors who enforce them. Moreover, it should do this at one motion for all branches of the Government.

Use of Pyrometers

One of the points on which definite instruction should be given for this very matter of ingot making is the temperature of the molten metal in the open-hearth and electric steel furnaces. Because no pyrometer for determining this temperature exists, a necessary step in our evolution is to devise one. This, though in part a question of pyrometry, is also in large part one of refractory materials.

To solve this problem a committee has been formed under the chairmanship of Dr. George K. Burgess of the Bureau of Standards, and with representatives of the Leeds and Northrop Company for pyrometry; of the Norton company, the Joseph Dixon Crucible Co. and the Harbison-Walker Refractories Co. for refractory materials; and of the Midvale Steel & Ordnance Co. and the Taylor Wharton Iron and Steel Co. for steel making. These two steel-making companies have placed their open-hearth and electric furnaces at the disposal of the committee for this work.

Fatigue of Metals and Ferromanganese

Our other committees are working in like manner on problems of immediate importance for war-winning. Thus the committee on the fatigue of metals, under Prof. H. F. Moore of the University of Illinois, is directing its study toward the endurance of aircraft crankshafts and of the electric welds in welded ships. That on ferroalloys, under J. E. Johnson, Jr., is studying the saving of manganese along three distinct lines, that of bringing the work of the least successful smelters up to that of the most skillful ones, that of replacing part of the manganese used in steel making with other deoxidizing agents, and that of lowering the manganese requirements of existing engineering specifications.

This work incidentally calls for the determination of many points in the combinations of oxides resulting from the substitution of other deoxidizing agents for manganese. A large number of research laboratories at many educational institutions and industrial works are collaborating in this difficult work.

This general study is carried on jointly by this committee and the U. S. Bureau of Mines and of Standards and the Geophysical Laboratory.

On account of its military bearing we cannot well outline the work of the committee on the improvement of metals by treatment at a blue heat, under Dr. Zay Jeffries, director, research department, Aluminum Castings Co., Cleveland, which has contributed so much toward the development of our aircraft.

Electric Welding of Ships

The committee on the electric welding of ships, under the chairmanship of H. M. Hobart of the General Electric Co., is making an exhaustive study of the technical and especially the metallurgical problems which arise in substituting electric welding for the customary riveting of steel ships. It is a division of the electric welding committee of the Emergency Fleet Corporation. Its investigations are carried on at many different works and laboratories, notably those of the General Electric Co. and the Bureau of Standards.

Researches by Our Own Personnel

The work of our own personnel is illustrated by the section of mechanical engineering, under Chairman Lester. It has long had its own engineers and draftsmen and it now has in addition the laboratories and machine shop of the Carnegie Institute of Pittsburgh. By means of these the rather nebulous but attractive inventions offered us are developed in co-operation with the division of physical sciences into definite concrete form, in which the military authorities may judge quickly as to their present and future utility. In some cases we complete the apparatus fully enough for actual service tests.

Among the inventions which this section is now developing are these:

1. A special gun for use on aircraft.
2. A special drive connected with it.
3. Control for aircraft.
4. Aircraft propellers.
5. Aircraft fuel.
6. Tanks of various types.
7. Mechanism for the control of trucks.
8. Special type of tractors.
9. Special telescopes.
10. Special balloons.
11. Parachutes.
12. Special aircraft motors.

Military considerations prevent indicating more closely the nature of these inventions. The stages in which these devices now are vary all the way from preliminary design up to nearly complete readiness for production. In addition, we have before us many other promising proposals which we cannot develop for lack of funds.

Government Support

In some cases, after we have shown clearly enough that a given invention is of real promise, we receive an appropriation from some military or other Governmental body to enable us to carry the development still farther. In other cases the research is taken over by some Governmental body. Thus the work of the committee on helmets and body armor was taken over by the ordnance department many months ago, and is still carried on by that organization and the Council jointly, its chairman, Dr. Bashford Dean, being commissioned as major. This accords with our general aim of originating the stimulating research. We shall accomplish more in the end if we leave to others the completion of the researches which we have led them to undertake. Our work is not so much to investigate as to cause investigation, cheerfully forfeiting the credit due the investigator proper. So, too, a device may be materially changed after it leaves our hands.

Results Reached by Other Divisions

The Division of Physics, Mathematics, etc., Lieut.-Col. R. A. Millikan, chairman, has played an important part in initiating and in some cases also in completing the development of the following matters:

Creation of an international conference on submarine problems and of nine groups of physicists in various parts of this country for submarine study in close co-operation with the U. S. Navy.

Preparation of specifications for all instruments for use on airplanes, including the selection and development of instruments and methods for photography for airplanes.

Organization of the meteorological service of the Army, involving the training of about 1000 men for this service.

Initiation of the sound ranging service of the Army.

Extensive investigations on special forms of signalling apparatus, wireless telephones, devices for the location of invisible aircraft, devices for the location of mining and tunnelling operations, devices for measuring the velocities of projectiles, naval range finders; means of preventing static charges of air ships; new form of submarine mines; special devices for improving visibility at sea, etc.

The Council's Financial Support

Subventions to the National Research Council have been in part as follows:

In November, 1916, the Engineering Foundation offered the services of its secretary and its whole income of $10,000. Of this part only was used.	$15,000
In June, 1917, the Carnegie Corporation gave for expenses	50,000
In February, 1918, the Rockefeller Foundation gave for medical work	50,000
About January, 1918, President Wilson gave out of his emergency fund	29,000
Given by Council of National Defense for research information committee	36,400
June, 1918, the Carnegiee Corporation of New York gave	100,000
For agriculture committee	3,000
From President Wilson's emergency fund, for the second half of 1919	61,000
From President Wilson's emergency fund, for the first half of 1919	61,000
Total	$407,400

Many other appropriations have been made by Government bureaus, educational institutions and private research laboratories for investigations which have

been conducted more or less directly in co-operation with the Research Council. The total amount of such contributions to research work cannot be closely estimated.

In our researches we have had the generous co-operation of engineers and men of science, and of industrial and educational establishments, without charge for time or materials.

ELECTRIC WELDING

Large Ship to Be Built by this Process for the United States Government

WASHINGTON, Oct. 22.—The Electric Welding Committee of the United States Shipping Board Emergency Fleet Corporation has decided to recommend the construction of a 9300-ton deadweight ship to be built by electric welding. The recommendation has not yet been approved because experts believe a smaller ship should first be constructed. Meanwhile there is about to be built for demonstration purposes at the yard of the Federal Shipbuilding Corporation at Kearny, N. J., a 42-ft. electrically welded midship section of a 9600-ton ship. The methods of assembling and welding to be used on this section are due to A. J. Mason, consulting engineer for the United States Shipping Board and member of the Electric Welding Committee.

America can claim the credit of the first vessel put together by electric welding. Several years ago the Geary Boiler Works at Ashtabula, Ohio, built a 60-ft. tug by the welding process. It has been in service on the Great Lakes, and has given great satisfaction. So far as the Electric Welding Committee knows, this is the first electrically welded vessel of any size built anywhere in the world. A welded barge built in England has also shown good results. It has been across the channel several times in stormy weather and has given no evidence of leakage or other trouble. So successful has it proved that England is now building a 1000-ton power ship largely to be electrically welded.

An electrically welded ship is credited with many advantages over a riveted ship. In a 5000-ton ship about 450,000 rivets are used. A 9500 deadweight-ton ship requires 600,000 or 700,000 rivets. By the welding process the saving in labor on the minor parts of a ship is reckoned at from 60 to 70 per cent. On the hull plating and other vital parts, the saving in labor, cost and time of construction by welding is conservatively placed at 25 per cent. Moreover, welding means a considerable saving in weight. By not having to use rivets the saving in weight on the hull of a 9500-ton ship would be 500 tons, and the ship could thus carry 500 tons more cargo.

That electric welding will some day largely replace riveting is also the judgment of the Electric Welding Committee, composed of 82 of the leading experts in both the electrical and metallurgical branches of the welding field. At the request of this committee, Capt. James Caldwell, R. E., Deputy Assistant Director of Materials and Priority for the British Admiralty, was recently sent over to co-operate with the committee, study the progress of welding here and give the committee the benefit of Britain's experiments. Captain Caldwell's report is highly favorable to electric welding. The Electric Welding Committee and Captain Caldwell agree upon these points:

That electric welded ships can be built at least as strong as riveted ships.

That plans for ships designed to be riveted can easily be modified so as to adapt them for extensive electric welding, and thus considerably save in cost and time for hull construction.

That ships especially designed for electric welding cannot only be built at a saving of 25 per cent over present methods and in less time, but a class of labor not now available for shipbuilding can be largely employed.

The repairing of the machinery of 15 German and Austrian ships that were sabotaged in New York harbor in 1917 was done by electric welding, and done with great rapidity. It was the success of this operation that in part led to the appointment of the Committee on Electric Welding by the United States Shipping Board Emergency Fleet Corporation. In England not enough oxygen could be obtained to do the welding by the oxy-acetylene method. Electric welding was therefore resorted to, and it was found, on the whole, more satisfactory for shipbuilding.

Special Barrel Handling Apparatus

An interesting type of Revolvator is in use in the oil storage room at the Erie, Pa., plant of the General Electric Co. This device, which is marketed by the Revolvator Co., 336 Garfield Avenue, Jersey City, N. J., is a portable elevator or tiering machine for lifting and stacking cases, barrels, bales, hogsheads, etc. It consists essentially of two uprights or elevator guides, an elevating platform and a revolving base which can swing around on its own center like a turntable, the whole unit being mounted on a wheeled truck equipped with a floor lock. The elevating platform is ordinarily raised by a crank and a set of gears, but a motor-driven platform is substituted for the hand-operated one where a high rate of elevating speed is desired.

A Special Combination of Platform Arms Enables a Barrel to Be Placed in the Storage Rack or Removed from It without Disturbing Any of the Others

In the installation at Erie a set of special arms is provided. The function of the machine here is to place barrels and drums in racks in the oil storage room and remove them as may be required. The use of this arrangement of arms enables any desired drum or barrel to be removed from the rack without disturbing the others, and it is, of course, possible to reverse the operation.

Midvale Employees Receive Message from General Pershing

WASHINGTON, Oct. 22.—Replying to a cabled pledge from 14,000 employees of the Eddystone Rifle Plant of the Midvale Steel & Ordnance Co., Eddystone, Pa., "to work earnestly and regularly until victory is secured," General Pershing has sent the following cable:

"The American Expeditionary Force sends thanks to the employees of the Eddystone Rifle Plant for their message. We thank you for what you have done, for what you are now doing, but most of all for what you are going to do during the coming months.

(Signed) PERSHING."

Electric Pig Iron from Steel Scrap*

Large Expansion in the Canadian Output—Fate of the Industry After the War—Pig Iron from Scrap and Ore

BY ROBERT TURNBULL*

At the meeting of this society, held in Pittsburgh in October of last year, I read a short paper on the manufacture of low phosphorus pig iron from scrap shell turnings in the electric furnace. [This was abstracted in THE IRON AGE, Oct. 11, 1917.] At that time this industry was only in its infancy, the total output in Canada being only about 900 tons per month. Today the Canadian output has attained over 2500 tons, and by the latter part of November the production will be between 4000 to 4500 tons per month. Furnaces are in operation at Orillia, Ont.; St. Catharines, Ont.; Collingwood, Ont.; Belleville, Ont.; Hull, Que., and Shawinigan Falls, Que., the two largest producers being at St. Catharines and Orillia, where the output per furnace is about 700 tons per month. Furnaces are building in Lakefield, Ont.; Shawinigan Falls, Que., and Vancouver, British Columbia, the iron produced in all these furnaces to be used for Canadian consumption with the exception of the Vancouver plant, where part of the iron produced there will be exported. Canada, at the present time, is almost entirely dependent on its supply of low phosphorus iron from electric furnaces, its usual supply of blast-furnace iron being shut off from the United States.

Improvements in the Process

A number of improvements have taken place in the manufacture of this iron since I read my last paper. The electrode consumption has been reduced, some months showing 21 lb. to the gross ton of iron. Kilowatt hour consumption has also been reduced, the average practice showing slightly over 500 to the gross ton. Ferrosilicon has been replaced by another product, which reduces the cost and helps the carbon addition. The carbon in the iron is seldom below 3 per cent, and in quite a number of heats 3.50 per cent is attained. The cost of producing the iron has gone up, mainly owing to higher labor and a general increase on all raw materials, including shell scrap; these items, with the exception of scrap, having increased over 50 per cent since the fall of last year.

As to what will be the probable use of electric furnaces, at present engaged in the production of low phosphorus iron, after the war, much will depend on the state of trade at that time, which, at the present time, no one can foresee.

Electric and Blast-Furnace Iron Compared

First of all, the class of iron produced in these furnaces today has not been considered by the consumer to be equal to the grade of iron formerly received from blast furnaces. If this is correct, the tendency of the consumer would be to return to blast-furnace iron when he can obtain it.

My answer to this is that the iron produced today in the electric furnace is now so close in quality to blast-furnace iron, it now being possible to attain from 3 to 3.50 per cent carbon in this iron, that by the time the consumer will again be able to import iron from the United States, he will have become so accustomed to using electric furnace iron that the deciding factor will be the question of price.

The Question of Sulphur and Phosphorus

The next question is: Will specifications on steel produced after the war, which at the present time allow very high limits for phosphorus and sulphur, be reduced to their former strict limits, which were 0.04 per cent for both phosphorus and sulphur?

This issue will have an important bearing on the manufacture of iron in the electric furnace. Should these limits be reduced to their former level, it will be impossible for the steel manufacturer to use the Bessemer grade of iron, which he mixes with the low phosphorus pig, to such an extent as he is now doing, and he will be obliged to use a very much larger quantity of low phosphorus pig—possibly 100 per cent more. As it is not likely this extra tonnage can be obtained for years to come from the United States, the only source of supply would be the present electric furnace product. Should, on the contrary, the present high limits be retained, the question of price between the two classes of iron would be the determining factor to the consumer, provided the United States should be in a position to supply Canada with its requirements in this grade of iron.

Analysis of 25 Consecutive Heats of Electric Pig Iron from Scrap Steel

Heat No.	Silicon, Per Cent	Sulphur, Per Cent	Phosphorus, Per Cent	Manganese, Per Cent	Carbon, Per Cent
254	1.02	....	0.016	....	3.42
255	1.10	....	0.019	0.70	....
256	1.15	0.023	0.017	....	2.77
257	1.40	....	0.015	....	....
258	1.18	....	0.019	0.70	3.21
259	1.10	0.020	0.013	....	....
260	1.10	0.016	0.021	....	3.32
261	1.06	....	0.018	0.70	....
262	1.00	0.019	0.016	....	3.17
263	1.07	....	0.013	0.74	....
264	1.20	0.012	0.015	....	3.48
265	1.28	....	0.017	0.75	....
266	1.12	0.011	0.021	....	3.07
267	1.00	....	0.014	0.74	....
268	1.02	0.010	0.014	....	3.09
269	1.02	0.011	0.039	....	3.18
270	1.28	....	0.032	0.69	3.36
271	1.07	....	0.032	....	3.05
272	1.10	0.009	0.021	....	3.10
273	1.20	....	0.030	0.68	2.93
274	1.72	....	0.022	....	3.21
275	1.12	0.012	0.028	0.66	3.40
276	1.02	....	0.027	....	3.22
277	1.25	0.010	0.013	....	3.18
278	1.42	....	0.014	0.66	....
Average analysis	1.16	0.014	0.020	0.70	3.19

Silicon desired.....1.00 to 1.25 per cent

The Supply of Scrap Turnings

The next question, and perhaps the most important one, is: Where will the electric furnaces obtain their supply of low phosphorus scrap turnings when the present source no longer exists? This brings up another question, which will be quite a determining factor in solving the problem. Will the open-hearth continue the use of turnings in the charge, as is being done at present?

I think we are safe in considering that the open-hearth will discontinue the use of turnings as soon as it can obtain its supply in heavy melting scrap, as the use of turnings in this furnace involves a greater use of pig iron, and there is a much higher melting loss when turnings are used as compared with heavy melting scrap. This loss is not taken so seriously at present, owing to the high prices being obtained for the finished product and the impossibility of getting enough heavy melting scrap; but more attention will be paid to this when normal competition again sets in.

*From a paper read at the thirty-fourth general meeting of the American Electrochemical Society at Atlantic City, N. J., Oct. 1, 1918. The author is electric furnace engineer, Welland, Ontario, Canada.

Before the war a considerable tonnage of steel turnings was available, and, as the production of steel in Canada is now at least 100 per cent more than before the war, a very much larger quantity will be produced after the war. Eliminating the open-hearth as a consumer this scrap will become, so to speak, a drug on the market as it was formerly and the electric furnace, as a low phosphorus iron producer, will be the natural consumer for this scrap. By paying a small bonus on low phosphorus turnings, machine shops would no doubt be willing to grade their scrap, as they are doing at present with shell turnings, and this would be a complete answer to our question, provided such conditions could be realized.

Ore and Scrap in the Electric Furnace

We must, however, consider the possibility of an insufficient supply of such turnings and what we would expect to do in such a condition. This would bring us back to the old question of smelting ore in the electric furnace, as this would be the only source of supply left, if the present furnace were to be used for the production of low phosphorus iron. Former experiments have shown that iron ore and steel turnings, mixed in certain proportions, give a production very favorable in proportion to the amount of power used, and smelting operations are very easy to handle.

The type of furnace which would be used to smelt such a mixture, would be of the continuous type, with a load factor approaching 100 per cent. As electric steel furnaces have a very low load factor, in some cases not over 50 per cent, the amount of extra power necessary to produce the same quantity of iron from a mixture of ore and steel turnings, as compared with our present type of furnace melting scrap alone, would not be considerable. About 1400 kw. hr. are required to produce one gross ton of iron from a mixture of 50 per cent metallic in turnings and 50 per cent iron ore, so that our present furnaces, which are of 1200 kw. hr. capacity, could produce 20 tons per day of iron, as compared with from 25 to 30 tons using steel turnings alone.

I am not prepared to say how the cost of the iron would compare in the case of the mixture as compared with steel turnings alone but as no ferrosilicon nor fluorspar would be required, and the return in metallic contents charged would be 100 per cent as against 90 per cent with turnings alone, besides a great saving in furnace repairs, this would probably more than compensate for the extra power, electrodes and carbon necessary for the reduction of the ore.

A mixture of this kind permits the use of iron ore concentrates, the charge being kept porous enough, owing to the presence of the turnings, and as these concentrates can be obtained very low in phosphorous, they could be used to advantage in the production of low phosphorus iron and permit the use of turnings with higher phosphorous contents. As the operation would be conducted in a reducing atmosphere, the resulting carbon in the iron would be comparable to the blast-furnace product.

Melting Iron for the Iron Foundry

Another use to which the present furnaces could be put would be the melting of iron for foundry purposes. The war having eliminated the exportation of English iron, and of that from the United States, foundries have faced the necessity of confining themselves entirely to Canadian iron, mixed with a very high percentage of scrap cast iron and, it must be confessed, with good success. As most of the plants which are producing low phosphorus iron would be suitable for foundry purposes. As the grade of iron can be controlled very closely and silicon added at little cost, there should be an excellent opening for these furnaces in replacing the cupola for melting purposes. Nothing but the cheapest cast-iron scrap could be used, including borings, etc., and the metal used direct from the furnaces to molds, without the use of any pig iron whatever.

The Westinghouse Electric & Mfg. Co., New York, has leased a floor at 110 West Forty-second Street for new offices.

Inverted Bench Gang Drilling Machine

A bench type drilling machine in which the relative positions of the work and the drill are reversed has been brought out by the Wolverine Caster Co., Traverse City, Mich. It is pointed out that this departure from the customary arrangement enables increased production to be obtained, due to the fact that the chips drop out as they are produced, thus clearing the drill point and enabling the machine to be operated at a higher rate of speed. An automatic weight feed which can be adjusted to various sizes of drills up to ⅝ in. in diameter and a work holding chuck, the jaws of which open automatically, are provided. The latter feature, it is explained, enables one operator to handle from six to eight spindles on account of the rapidity with which the work can be chucked. Among the work which the machine is particularly designed to handle are cast iron, steel and brass articles where a production of between 7000 and 10,000 pieces per day is required.

Having the Drill Feed Upward Causes the Chips to Drop Out and Enables Faster Speeds to Be Used in a New Inverted Bench Drilling Machine

In the machine the drill remains stationary, while the work is fed down over it. This is accomplished by an automatic weight feed, which can be adjusted according to the size of drill used. The handle at the opposite end of the lever to the weight is not used to force the work against the drill, but serves merely to lift the weight and draw the work away from the drill. When the handle is pointing downward the jaws of the heavy work holding chuck open automatically and center the work as it is inserted. A variety of odd shapes can be chucked by changing templates or bushings, and if the work cannot be held tightly by the springs of the chuck a cam can be attached.

The spindle is 1½ in. in diameter and carries a telescoping center and drill chuck, this arrangement being relied upon to give sufficient adjustment to take care of differences in the length of the drills. A spring cushion at the top of the spindle is provided to guard against drill breakage when the point comes through the work. The machine is driven by a tight and loose pulley countershaft in the base, thus enabling any machine to be stopped and examined while the others in the gang continue to run. From the countershaft the power is transmitted to the spindle through gears which are protected. The use of the gear drive eliminates the use of right-angled belts which are likely to slip or jump off the pulleys. A ball bearing thrust is provided at the bottom of the drill spindle, and the bearings above are protected by a 4½-in. flange head which is relied upon to balance the drill and shed the borings. Grease cups lubricate the bearings.

In use the drills, which are 34 in. high, are located on a bench, so that the distance between the spindle centers is 12 in. and each machine is driven by an independent belt connection from a countershaft which may be located overhead or underneath the bench. In this way all the operator has to do is place the work in the chuck and release the weight which tends to press the work down against the drill. By providing a sufficient number of spindles, the operator can be employed at all times chucking or removing finished work.

The Standard Rail & Steel Co., St. Louis, has acquired a 15-acre tract on the Terminal Railroad tracks at Madison, Ill., to which it will move in order to increase its facilities.

Safety Engineering in the Machine Shop*

Hazards Due to Structural Details—Machine Designers Urged to Build All Tools for Safety —Transporting Materials Through the Shop

BY C. A. BRIGGS†

A SAFE machine-shop layout must be preceded by a safe room or building. The modern machine shop is of the one-story, saw-tooth-roof type, of fireproof construction, adequately ventilated and heated, with complete sanitary toilet facilities and cold water for washing purposes. It has much natural illuminating and provisions for proper artificial illumination, pleasant plant surroundings and a safe approach for employees.

The Principal Building Hazards

In every type of building or room used we should provide safe exits with respect to machines, groups of employees and acute fire hazards. Windows should be so arranged as to be easily cleaned, both inside and out—the outside should not be left entirely to the elements. Some serious accidents have occurred through allowing latch-rods of first-story windows to obstruct outside passageways, and the hinging devices of metal windows should be of such construction as to prevent danger of the frames falling out when carelessly closed or opened by employees. Window frames of the second story should be of a safe height or protected, in case employees use the window-sills for seats or in which to place objects which may fall and injure those below. Window glass should be chosen with reference to the fire hazards surrounding; wire glass is preferable; the upper sashes may be of ribbed or opaque glass with clear glass on the line of vision.

Safe floors are as important in the machine shop as safe machines. A broken, slippery, obstructed or uneven floor is an accident-maker. Efficiency in trucking and handling materials demand sound floors. Modern machine-shop managers will give careful attention to State safety laws requiring safe floors.

Durability of Herringbone Flooring

To prevent accidents all floors should be kept in good repair. A small hole in a floor, a board allowed to project above another, a weak manhole cover, oil on the floor—particularly near dangerous machines—are all hazards that may cause serious injury to workmen. The maintenance of floors, where heavy duty and continuous service is required is a serious problem. In one of the International Harvester Co.'s plants an excellent idea for repairing a worn floor has been worked out. A strip wide enough for two trucks to pass is cut from the old floor; a strip is laid down through the center and then diagonal flooring is laid on either side, forming a herringbone aisle.

Concrete Floors

Concrete floors are growing in popularity for factory use. As a rule, litle objection is found. In basements, where dampness is liable to occur, it is said that if a petroleum residuum oil is mixed with the concrete, the floor will remain dry. If a concrete floor "dusts," one or more coats of one of the several preparations now on the market will bind the surface.

Men standing for long hours at machines or benches sometimes complain that concrete floors are hard on their feet. This condition can be corrected by providing mats or low wooden platforms for the workmen to stand on. These, however, may provide a tripping hazard and, where possible, these platforms should be made flush with the floor. There are a number of composition flooring surfaces now on the market which provide an easy walking base.

Illumination

We naturally approach the subject of illumination with some timidity. There are, however, general rules which we may safely follow and leave the more technical side to lighting experts. The first necessity in lighting, whether natural or artificial, is that it be sufficient. We should first adopt all possible means to use every bit of daylight available, and sunshine too, where it is not objectionable, for as the proverb reads: "Where the sunshine does not enter, the doctor does." Window shades should be placed where the sunshine would strike moving parts of machines and cause discomfort to workmen by reflection or glare. If practical, machines upon which particularly careful or dangerous work is done should be placed where there is good natural light. Walls and ceilings should be painted and maintained white, in order that they may reflect, rather than absorb the light.

Work benches will be found vastly more convenient and workable, if, instead of being placed parallel to the windows, as is usual, they are placed at right angles to them, so the light will reach the men from the shoulder in preference to directly in the face. In placing the benches at right angles to the windows, the danger from collision with passing trucks will be avoided and more working space assured.

In selecting the type of illumination some consideration should be given to the ease with which lights, globes, etc., may be kept clean or renewed. Individual drop lights should be shaded, as well as protected by a wire cage against breakage. The proper degree of light should be scientifically determined and maintained through careful inspection by a lighting expert. This will correct conditions recently noted. A workman was discovered using a light globe of immense proportion and wattage, suspended directly in front of his eyes. When questioned he tried to justify his possession of the light by saying "he had so many small ones stolen that he finally succeeded in finding one that was so large that it could not be taken away."

Heating and Ventilation

The heating and ventilating of a machine shop is a problem that should be carefully considered. This much can be said, in general: A system should be installed that guarantees an even temperature, with freedom from vitiated air and an avoidance of drafts. Steam heat has been found practical; place the radiators next the outside walls, and where the room is extra wide, or in case of a saw-tooth roof, overhead to avoid obstructing floor space.

Machinery Should Be Built for Safe Operation

A long step toward making the machine shop a safe place to work will have been taken when we have brought the makers and designers of machinery into the safety camp. They are the outlaws of to-day. Machine builders say: "Why should we spend money to place guards on our machines when we can sell our product without guards faster than we can make them?" It is very significant, then, that we must compel them to conform to safety requirements. The open door for the safety engineer is right here; if he has not entered and placed himself on record as strenuously opposed to the manufacture or sale of dangerous, unguarded machinery, he is not living up to the ideals of his profession.

The National Safety Council recently sent out a

*From an address before the convention of the National Safety Council at St. Louis, Sept. 20.

†Safety engineer, Willys-Overland Co., Toledo, Ohio.

questionnaire seeking data on this interesting subject, and we trust that ere long manufacturers will have brought themselves to the point where they will *think safety* when constructing dangerous machines.

It seems unnecessary to state here that exposed gears should be guarded "wherever located," and if there should be any priority rule as regards location we would say from recent accident experiences "That exposed gears and set screws that are up and out of the way where nobody ever goes" should be guarded first.

The old types of lathe dogs should be replaced with the safe ones that are coming into general use. Milling machines are responsible for a great many painful and serious accidents, but there are guards now on the market that protect the cutters. A larger part of the hazard peculiar to these machines may be eliminated by setting up the job so there will be a safe clearance between the cutters and the table or bed of the machine.

Particularly dangerous machines or those from which dust, fumes or vapors may arise should be isolated, if possible. Grinding wheels should be located with respect to the plane of rotation and employee or groups of employees.

When locating machines, care should be exercised to have production and routing worked out so as to reduce the handling of material, both the raw and finished product.

The Unit Motor Drive vs. Overhead Transmission

In the matter of power transmission more can be said on the side of safety for individual motor drive equipment than can be credited to methods of using overhead shafting and belting. The first cost is higher for the former method, but in the long run the added cost is an asset, as the dangers from oiling and caring for overhead shafting are eliminated, as are belts and pulleys for individual machines. Another asset is the reduced cost of maintenance, as any machine may be stopped or started irrespective of another, whereas, in the large-group system of control, the same amount of power is required, regardless of the fact that but a few machines in the room or department may be in operation. In our own plant, during the past year of rapid change to a war basis, when many departments were created and some depleted, we presume that the saving in electric current alone would have gone far toward making up the difference in cost between these two systems.

With the transmission of power by overhead shafting and belts, considerable can be accomplished for safe operation in the method of installation. Driving and other swiftly-moving belts should be guarded and motor platforms should have safe access, with room enough so the electrician will not be compelled to hurdle motors or belts as he pursues his dangerous calling.

Self-oiling bearings so equipped that they may be maintained from the floor by use of long-necked oil cans is another good practice. Of the different kinds of bearings—ball, brush, ring or roller—we find a decided difference in opinion among shop men as to service. It is best, however, to have a standard equipment, so the oiler's hazards will be minimized.

If the group method of control is used, the units should be as small as possible in order to keep the control within easy reach in case of an accident. It is possible with this arrangement to shut down a small group for any purpose, thus saving wear and tear on the main shafting and belting. Where a whole system is under one control, employees are prone to take long chances in doing emergency work, such as repairing belts, etc.

Transportation of Materials

In the transportation of material we find a very difficult situation in the ordinary machine shop. Careless loading and overloading seem to be the most frequent accident sources, and constant oversight is necessory to correct this. Plenty of trucks should be provided, so that men will not be tempted to overload, and in order that stock may be moved from aisles and passageways. Aisles should be laid out with generous width, so trucks may pass without danger of collision or foot passengers endangered. A good plan is to paint a safety line on the floor to insure plenty of aisle clearance.

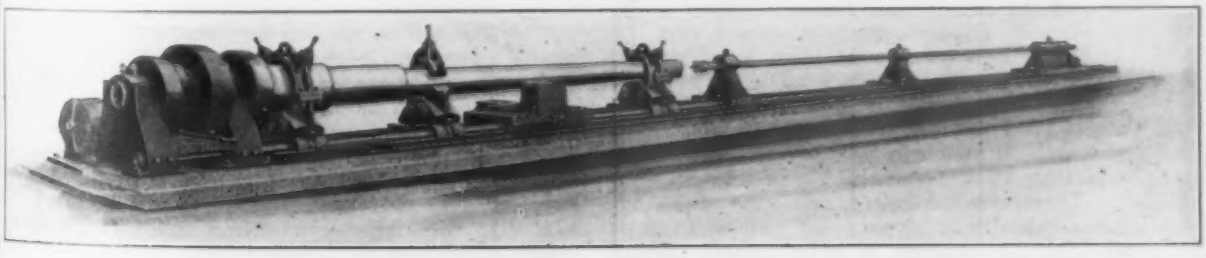
Where extra heavy work must be transported some distance through a department, traveling cranes are of great value; where this expense would not be justified, a monorail system might be employed. Small jibs with chain hoists at individual machines are desirable and necessary for the safe and ready handling of heavy work and a conveyor system is often used between machine groups on continuous operations. This is a safety asset as well as a production booster.

Finally, when we have gone the second mile in our observation of every known safety law, no matter how stringent they may be, we have still with us the largest, most complex accident provoker of them all—one that no State or local law has been able to curb and no mechanical guard can ever cover. We refer to the careless workman—the man who wagers his finger against a movement of time, and loses.

The essentials, then, for a safe machine shop layout are these: Practical education of employees, well-guarded machinery, careful inspection and maintenance of all safety devices, and *eternal vigilance* as the working motto of every man.

Gun Boring Lathe with Concrete Bed

A gun boring and turning lathe with a concrete bed and metal ways has been brought out by David A. Wright, 568 Washington Boulevard, Chicago. Application has been made for patents covering this construction, which is similar to the planing machine of the same builder which was illustrated in THE IRON AGE, Aug. 21, 1918.



A New Lathe for Boring and Turning Has a Concrete Bed and Round and T-Section Metal Ways

The lathe can be supplied in sizes ranging from 42 to 120 in. swing, and any ordinary length of bed. One of the ways is a piece of ground steel shafting, while a T-section casting is employed for the others. The boring bar bracket, carriage and headstock are all equipped with individual motor drive and gearboxes for speed changes and thread cutting are provided. The lathes if desired can be converted into double end boring and turning machines by extending the tailstock end of the bed. The advantages claimed for this form of construction are that the lathe can be shipped in a minimum amount of space, and can be accurately lined up in a short space of time.

In lining up the lathe the front way of steel shafting is lined up from the spindle and fastened into the headstock with babbitt metal. The rear way is then lined up from the ends of the front one.

Implement Makers Discuss War Conditions

Restriction of Material, Washington Activities, Railroads and Labor Live Topics at Convention— Support Pledged to President and the Government

WAR-TIME conditions were discussed at an unusually successful convention of the National Implement and Vehicle Association at the Congress Hotel, Chicago, Oct. 16 to 18, the gathering marking the twenty-fifth anniversary of the organization. At the concluding session, G. A. Ranney, of the International Harvester Co., Chicago, was elected president, and H. M. Wallis, of the J. I. Case Plow Works, Racine, Wis., chairman of the executive committee. At the opening session, the following resolution was adopted and immediately wired to Washington in the name of the Association:

> We hereby extend our respectful greetings to the President of the United States and pledge him our unqualified support in securing an honorable peace agreement with Germany, such agreement, however, to be predicated upon the unconditional surrender of the Central Powers and its provisions to be consistent with the mutual rights of the United States and her Allies.

In view of a surplus in the association treasury it was unanimously voted to invest $10,000 in the fourth Liberty Loan.

The convention was called to order by the president, C. S. Brantingham, Emerson-Brantingham Co., Rockford, Ill., after which the entertainment features were explained by S. F. Brigham, Glidden Co., Chicago.

Huge Consumer of Steel and Pig Iron

Mr. Brantingham devoted the early part of his address to a historical review, finally pointing out that it has 306 active members and 153 associate members. Referring to the important events of the past year, he mentioned the War Industries Board's recent action in curtailing the supply of materials to the industry to the extent of 25 per cent, and said in this connection:

"This industry uses annually approximately 1,200,000 tons of steel and 800,000 tons of pig iron. A saving of 25 per cent on these two metals amounts to 500,000 tons. Edward N. Hurley, head of the Shipping Board, recently stated that it requires from 2500 to 3000 tons of steel and pig iron for each ship. Also, that each ship will maintain 3000 to 4000 men on the other side with food, ammunition and all necessary supplies. Therefore, the above releasing of 500,000 tons by this industry to be used for war purposes, if all applied to the building of ships, would furnish materials necessary for 200 ships; and, if each ship will maintain 3000 to 4000 men on the other side, this material that this industry is releasing would maintain 600,000 to 800,000 men for one year. This certainly is an object worth working for; and each person engaged in this industry should consider it a privilege and a great honor to put forth special effort on his part to contribute his share of this 500,000 tons, and to exert every ounce of energy in his organization to use the materials at their disposal so that our farmers can have the necessary machinery to raise 100 per cent of normal crops and, if possible, the full expectation of the Department of Agriculture, which I believe is 10 or 20 per cent above normal. This cannot be done without thought, effort, and hard, intelligent work.

"It may also be one of the greatest business blessings, in disguise, that could possibly come to us; for if this war ends next year as we all pray that it will, this industry as a whole can well thank the War Industries Board for this curtailment if we have low inventories when the price readjustment time comes."

In reference to foreign trade, Mr. Brantingham said: "Regarding the development of our trade in foreign countries after the war—our plans should be laid now. We must support and encourage our merchant marine and help maintain this nation as a world commercial power. England, France and even Germany have already begun to make their plans for their foreign trade expansion after the war. It, therefore, behooves this industry not to be caught asleep when that day comes. The training of young men, both before and after the end of the war, for foreign trade should not be overlooked, for the competition will be keen and training and experience will count as never before."

Freight Advance Adds Heavily to Cost

The report of the executive committee was submitted by Chairman G. A. Ranney, International Harvester Co., Chicago. Reviewing the events of the year, Mr. Ranney, in giving an analysis of a questionnaire, said that 149 members reported that the recent advance of 25 per cent in freight and passenger rates will add $6,168,839 to their operating expenses and that it is estimated that for the entire industry the increase will amount to over $7,750,000. His report also stated that while the manufacturers of agricultural implements is officially recognized by the Government as a national necessity, 58 of the Association's members have taken on the manufacture of various kinds of direct war work in their plants, aggregating over $40,000,000. He also urged the members to be thinking and planning ways and means to secure the foreign trade that awaits the industry after the termination of the war. He said: "Instead of speculating about something that General Pershing and his associates will settle in their own way and time, let us study ways and means to carry the American flag and American farm machines to every port of entry that will admit us to foreign agriculture."

Benefit to Accrue from Reduced Lines

E. W. McCullough, secretary and general manager of the association, was the recipient of resolutions of praise for the efficient manner in which he has handled its affairs. His report made an excellent showing as to finances. He said that 230,190 pieces of printed matter had been distributed in the year, and that both uniform statements and trade acceptances (blanks) showed a marked increase in numbers ordered over the preceding year and are rapidly coming into general use. Referring to meetings called for bringing about compliance with Government pressure for the conservation of materials, capital and labor through reducing all lines to a minimum of variety as to sizes and styles, he said:

"These meetings were remarkable for the display of practical patriotism and willingness to assist the Government with its problems. The giving up, however, was not without its compensations, for a large economic benefit is sure to accrue to the manufacturer through the simplification of his lines by reduction in variety—not to be returned to after the war."

Mr. McCullough paid a tribute to the farm implements committee's performance of arduous work for which it received no allowances for travelling or personal expenses or for time. Its work had been invaluable, Mr. McCullough said, as was evidenced by its success in securing a reduction in the price of steel which is shared by all engaged in the industry. Mr. McCullough will continue at his post.

The second day of the convention was termed "War Service Day," the program opening with an illustrated address entitled 'Our Government's War Organization," by G. A. Ranney, in which the author sketched the purpose and personnel of the various Governmental bodies now controlling industry.

The farm implements committee, which has rep-

resented the industry at Washington, and in a manner which has been pronounced most admirable handled the numerous problems created by the war, submitted a report through its chairman, C. S. Brantingham, the other members being G. A. Ranney, W. H. Stackhouse, F. R. Todd and H. M. Wallis. The report reviewed pig-iron distribution and suggested that manufacturers watch their stock very closely; described the manner in which the industry was licensed, referred to prices of steel and the curtailment of iron and steel. On the subject of malleable castings it said:

"On or about Aug. 13, 1918, the malleable iron manufacturers changed from an average price for malleables to a classified price, which change if permitted to stand would increase the cost to this industry upward of $100 a ton, which on the estimated tonnage of 200,000 tons, amounts to approximately $20,000,000, about 60 per cent of which is purchased from outside malleable makers. Your committee believes this advance in price is unwarranted, and will have a very detrimental effect on the industry as a whole unless remedied. Negotiations have been carried on with representatives of the malleable foundries; but the matter at the time of writing this report has not been adjusted. Your committee greatly need more active cooperation from the members in dealing with this question, or this change will be a costly load for the industry to carry in years to come—especially for all manufacturers who do not make their own malleable iron castings."

Declares Labor Profiteering Encouraged

W. H. Stackhouse, French & Hecht, Springfield, Ohio, in the course of an address on "Some of the Effects of Government Operation of our Railroad Systems," which reviewed the entire railroad situation, referred to the wage advances given to railroad employees, and said:

"From the best data obtainable, it is evident that the recent increases alone in freight and passenger rates, will cost the farm operating equipment industry annually the imposing sum of $7,500,000 and to that extent reduce its present slight margin of profit, but the irony of the situation is impressively evident in the Government's present investigation as to this industry's profiteering on its insufficient prices, while labor is granted its every demand, no matter how unreasonable, in wage advances, thus indicating that while profiteering is very properly discouraged and condemned in manufacturers, its practice by labor is directly encouraged by the Government.

"Apropos of the rate increases referred to, and as an evidence as to how expensive Government operation of the railroads may become in this country, taking as a criterion their costs elsewhere, it is interesting to note that on the basis of per ton mile, the Interstate Commerce Commission states that in 1916, the railroads in the United States were paid 7.15 mills, while *Current Opinion* states that in normal times railroad freight transportation per ton mile, in other countries, cost as follows: Germany, 1.5c.; France, 1.9c.; Russia, 2.2c.; Austria, 2.25c.; Italy, 2.4c.; England, 2.6c.; Japan, 5c., and China, 10c.

"This showing unmistakably indicates the superior efficiency, at a greatly reduced cost, of the railroads of the United States, under private management, as against the railroads in Europe and Asia under either private or Government operation.

"Careful consideration of this subject, up to this point, would seem to indicate the principal advantages accruing to the railroads in this country under Government operation, to be that their net income is guaranteed and that they can borrow money, as their necessities require, from the Government; while the more than offsetting disadvantages consist in extreme extravagance and inefficiency, as compared with private management, for it should not be overlooked that such extravagance involves the shippers and travelers in increased rates, while the general public is compelled to meet by higher taxes any resultant deficit.

"Among the minor annoyances, incidental to Governmental operation, are the unbusinesslike abrogation of the heretofore recognized credit system with the most responsible shippers, beyond twenty-four hours, and the necessity of their furnishing a bond covering their credit for an additional equal period, to say nothing of the increased impersonal and perfunctory attitude of the railroad employees toward the public.

Wage Advances May Breed Higher Rates

"The conclusion therefore appears to be inevitable, that if we desire to plan constructively to save the railroads for the country at large, to be operated economically, efficiently and continue to be given the benefit of the invaluable initiative peculiar only to private ownership the business element of the country should endeavor to crystallize public sentiment by the end of the war, to express itself unmistakably in favor of modifying existing laws, at least to the extent of providing for thorough control and regulation of all railroads by the federal government, under federal incorporation, with the legalizing of pooling, and that the railroads, in accordance with the existing railroad control act, at the expiration of the period prescribed following the war, be restored to private operation; the country thereby escaping the numerous and serious ill effects of their political management by an excessively paternalistic government."

Explains Dependence on Labor Federation

In speaking on the topic "Labor," H. F. Perkins, International Harvester Co., now industrial management advisor, War Labor Policies Board, Washington, said it was to be regretted that the creation of the board with which he is connected had not been simultaneous with that of the War Labor Board. When it came into existence, the policies board found that practically every branch of the Government had its own labor adjustment group, and some of these stood in the way of the new board.

Mr. Perkins said that the leaders of the American Federation of Labor in Washington were in accord with the fundamental principles which had been evolved for the handling of labor, but the same could not be said of some of their subordinates throughout the country, who in reality had run away from their leaders. He said that recognition accorded by the United States Government to the American Federation of Labor came about because it was essential that the Government have access to influences that in the largest degree control labor, and unquestionably that influence was the American Federation of Labor, despite the fact it represented but one of every four workers. The authorities had before them the serious troubles experienced in England and France, and it was hoped to avoid similar disturbances here.

The Government must recognize, the speaker said, that the continuance of certain policies will mean the creation of a frankenstein that will be a peril to true Democracy. He alluded to the fact that the 8-hour day was originally inaugurated in Government shops, became operative in contractors' works, and that now it is being extended to meet the emergencies of war. He said that in a plant where some employees worked 8 hours and others worked more hours, the latter could not understand the situation, and with a view of making all men feel they were being treated alike it was decided in a recent conference of seven or eight adjustment boards that the basic 8-hour day should prevail in all contracts.

Piece Work Growing in Favor

Mr. Perkins said the subject of collective bargaining contained too many ramifications for discussion in a short talk, but that it presented tremendous possibilities. He paid a tribute to the War Industries Board, and said that the country would be in dire straits without such a body. Mr. Perkins said there is a growing conviction in favor of piece work, and he believed that future labor policies developed at Wash-

ington will be based on this system. Formerly it had been regarded largely as a whip in the hands of the employer, but a change was discernible in the attitude of the Government and on the part of the union leaders also.

The speaker asked his audience what it imagined was the state of mind of the workingman when the Government enforces the 8-hour basic day, and answering the question, said a conviction is being created that the 8-hour day is morally right, an attitude on which any attack made will have to be scientific. In referring to price fixing he said if commodity prices are fixed and labor costs advanced industry faces the likelihood of operating at a loss. He said that the power of the Federation of Labor is growing, while industrial managers are too much divided, and made the point that mutuality of interest should be recognized.

Mr. Perkins was given an ovation when he concluded.

William Louden, Louden Machinery Co., Fairfield, Iowa, and Frank Bateman, Bateman Mfg. Co., Grenloch, N. J., both long-time members were made honorary members.

An association circular, designated as No. 21, distributed at the convention explained in detail the steps necessary in connection with the restriction by the War Industries Board of the implement industry's consumption of iron and steel in the year Oct. 1, 1918 to Oct. 1, 1919, to 75 per cent of the quantity used in the similar period ended Oct. 1, this year, and made the interesting statement that:

"All inventories of pig iron and steel on hand Oct. 1, 1918, may when desired be used in addition to the 75 per cent permitted to be received from the suppliers in the manufacture of such farm operating equipment as the manufacturer believes will be in the best interests of the country."

With each order an implement manufacturer is to furnish an affidavit to the supplier of iron or steel, to the effect that the quantities ordered are not in excess of the 75 per cent referred to. A form of affidavit has been printed by the farm implements committee of the association.

The Farm Implements Committee will supervise the operation of the restrictive measure, and will keep a record of the quantities of materials received by the manufacturers, the latter rendering monthly reports on blanks supplied for the purpose. The committee also supplies a blank for the presentation of a report on the tonnage used Oct. 1, 1917 to Oct. 1, 1918. Each manufacturer must file with the Priorities Division of the War Industries Bcard a pledge that he will conform with the restriction.

Ore Deposits of Sweden

WASHINGTON, Oct. 22.—According to information received by the Bureau of Foreign and Domestic Commerce, the Stockholms Superfosfat Co. has begun to exploit large and rich deposits of wolframite and scheelite near Yxsjo in Bergslagen, and there are great hopes that there will be sufficient to supply all Sweden's needs, which are estimated at 20 tons a year. Since 1916 no wolfram has been imported to Sweden and the metal has not previously been worked in Sweden. Big deposits of ochre have been found at Bratteborg in Smaland.

A new and very valuable copper ore has also been discovered in the district of Varmland, Sweden. It is said to be an oxidized copper mineral consisting of about 90 per cent pure copper and a small quantity of gold. The mining will probably soon be commenced.

The Bureau has also received, through Dutch sources, the results of the investigation by mining engineers of the iron ore deposits recently discovered in the Malili district of the island of Celebes. The commission reports that this district contained at least a billion tons of so-called lateritic iron ore. The latter differs from other iron ore by its high contents of nickel and chrome, which make it the more valuable as it can be used in the production of special kinds of steel.

BELGIAN RECONSTRUCTION

Merchants and Manufacturers Organize Corporation for Collective Buying and Selling

A co-operative corporation known as the "Comptoir National" was organized June 15 by Belgian manufacturers and merchants, with the object of helping the reconstruction and reconstitution of Belgian industries and trades. The corporation will work under the control and with the financial assistance of the Belgian government. Its initial capital, limited to 1000 francs per stockholder, amounts so far to 519,200 francs, contributed by Belgian manufacturers and merchants living just now outside of invaded Belgium.

The State will help the organization by putting its purchasing plan before the interallied commission, in order to obtain for Belgium her share of the raw material coming under the control of the commissions. The Comptoir National will purchase, either for the State's account, or for the account of those manufacturers and merchants who will have obtained the financial cooperation of the State for the payment of their purchases, as well as for the account of individuals who do not require financial assistance. The material ordered or purchased from now on is to be delivered as soon as possible after peace.

The income of the Comptoir National will consist of a commission sufficient to cover its general expenses and insure an interest of 5 per cent on the capital paid in. Profits over this will be distributed among the buyers in proportion to the amount of their purchases. While everything is organized and carried out under the form of a commercial company, the Comptoir National has in mind the broad interest of Belgians, and hopes that all will keep this point in view when presenting their propositions to the corporation.

The head office of the company is located in Paris, 15 Rue Louis le Grand. There are also branch offices in London, 110 Cannon Street, and in The Hague, 173 Bezuidenhout. Catalogs and price lists in triplicate are invited, and should be sent to the head office.

Eagle Submarine Chaser Declared a Decided Success

WASHINGTON, Oct. 22.—In a public announcement, Secretary Daniels declared that the first of the "Eagle" boats built at the Ford plant in Detroit, had proved a decided success in her preliminary trials.

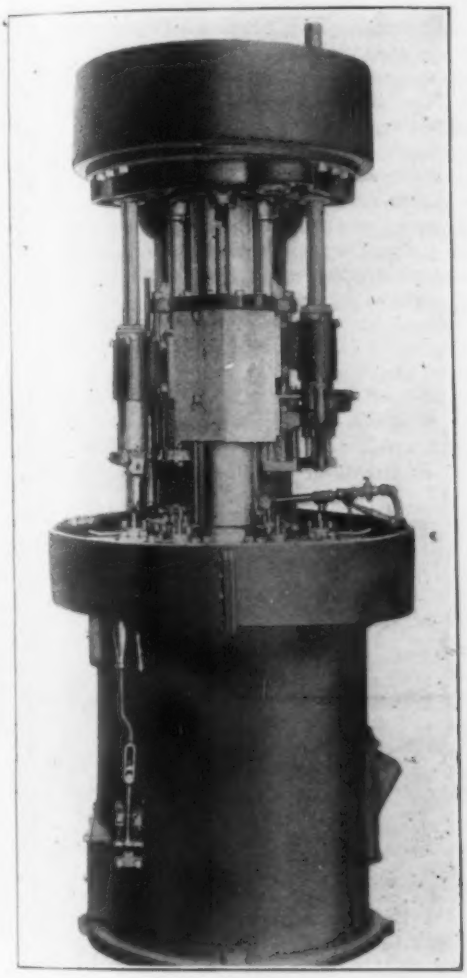
"The naval officers who witnessed the test of the first boat of the 'Eagle' class report that it is an excellent craft and promises even better results than were expected," said the Secretary. "Not only did the vessel exceed her contract speed, but showed exceptional maneuvering qualities, and appears to be very robust and seaworthy. These are not small sub-chasers, but are 200 ft. long, as large as the early type of destroyers, and have most of the characteristics and advantages of destroyers, except, of course, they are not of such high speed. They are well built and well armed, and have unusually good provisions for the comfort of the personnel. The interior design and furnishings are very much the same as in our modern type destroyers, and the entire craft is staunch and well built."

The Pittsburgh Mining Machinery Co., First National Bank Building, Pittsburgh, is erecting a one-story building at Cantril and Magnolia streets, North Side, Pittsburgh, to be used for the rebuilding and repairing of coal mining machinery. Shop equipment which the company now has at Tunnelton, Pa., will be moved to the new building, but some additional equipment will be required, particularly small machine tools. The company is not in a position to figure on this equipment at the present time.

The Carnegie Steel Co. has arranged for a temporary hospital with 75 beds at Duquesne, Pa., to take care of influenza patients among its employees.

Automatic Multiple Chucking Machine

Ability to machine parts in large quantities and utilize unskilled labor after the machine has been set up and timed are the principal advantages claimed for a new vertical automatic multiple-spindle chucking machine that is being built by the McDonough Mfg. Co., Eau Claire, Wis. Work from 3 to 6 in. in



Cup Turning, Drilling, Boring, Reaming, Facing and Tapping Can Be Performed in a New Vertical Automatic Chucking Machine Equipped with Five Tool Carrying Spindles and a Blank Station for Loading and Removing the Work

diameter is handled, and the operations of cup turning, drilling, boring, reaming, facing, tapping with collapsible taps and drilling multiple offset holes can be performed. The production from one machine which is now in use is 30 finished pieces every hour. As four machines were previously required to maintain this rate of output, it has been possible to release three skilled operators for other work.

The machine has a blank station and five tool-carrying spindles, the latter being mounted on a turret which is concentric with the table and does not revolve. The tools are fed automatically to the work by the vertical movement of the turret, and after the spindles have performed their different operations, the finished piece is removed when it is at the blank station and an unmachined part put in. The spindles approach toward and recede from the work at a relatively high rate of speed, and the movement of the spindle carrier is obtained by a quadruple screw operating through a bronze nut in the center column. The spindle carrier has a total travel of 13 in., and the initial 4 in. of this movement is required to control the withdrawal of the locking pin and the indexing of the table. This screw is revolved by a worm and worm gear controlled by three friction clutches, one for the rapid approach, another for the feed and the third for the rapid reversal of the tools. The use of friction clutches to control these movements is relied upon to protect the machine against accident. For example, if a tool should break and jam in the work, the feed pressure would increase and cause the feed friction to slip, while if in the rapid approach or reversal of the tools or the indexing of the table any part of the machine jams, the friction clutches controlling these movements would slip, thus providing automatic protection.

The table is 36 in. in diameter, and space is provided for six chucks or work holders measuring 10 in. in diameter. The size and design of these chucks and the tools on the spindles is, of course, varied to suit the requirements of the particular work that is being done. Each chucking position is successively brought in alignment with each spindle as the table revolves. While this movement is ordinarily one step at a time, it is possible to arrange for two or three space indexing, depending upon the operations required. The time of machining any piece is that of the longest operation plus the time of one index.

The machine is controlled by two levers within easy reach of the operator from the chucking positions, and the speeds are varied by change gears. One set controls the speed of all five spindles, and individual sets of gears are provided for each spindle, thus enabling the tools to be operated at their most efficient speeds. Single tools are ordinarily inserted in the spindles, although multiple drilling heads can also be employed when the work to be done renders this arrangement practicable.

Record Output in the Connellsville Region

UNIONTOWN, PA., Oct. 21.—The production of bituminous fuel in the Fayette or Connellsville region for the week ending Oct. 12 is the first week under virtual prohibition in this region. The fuel output was the greatest and the individual efficiency of the men was the highest in the history of the Connellsville district.

These facts are shown in the official figures of the United States Regional Fuel Administration and the regional administration's analysis attributes practically the entire gain of 4000 tons, in round numbers, over the week of Sept. 28, and of 35,000 tons, in round figures, over the production for the week ending Oct. 5, to the effects of the dry zone placed as a result of the Spanish influenza epidemic in Pennsylvania.

The total production, in terms of coal, for the Connellsville district for the week ending Oct. 12, was 749,384 tons, an increase of 4541 tons over the week of Sept. 28, the previous best production week in the region, and of 31,547 tons over the production of the preceding week, ending Oct. 5. The coke shipments were 321,901 tons and the coal shipments were 266,533 tons.

The record which has been established by the Regional Fuel Administration here is attracting wide attention in the iron and steel industry. THE IRON AGE, from week to week, has described various interesting phases connected with the efficiency methods introduced in the region, and these articles have had much to do with arousing widespread interest in the methods here. The increased output has been almost entirely the result of increased efficiency, increased co-operation among officials and operators and producers and among the workers themselves, and an outstanding feature of this latter phase is the fact that many of the workers are of alien birth and not a few of alien enemy extraction.

The Modern Tool Co., Erie, Pa., is building an addition to its plant at a cost of $100,000, consisting of the main building of steel and brick, 74 x 330 ft., two and three stories, and an L of steel and brick construction, 70 x 100 ft., two stories. Machine tools and other equipment for the buildings, including cranes and hoists, have been purchased, and will be delivered during October and November. The main building will be used exclusively for the manufacture of Modern cylindrical grinding machines, and the L building will be used as a stock and store room for parts. The additional manufacturing facilities will increase the company's output 50 per cent.

Iron and Steel Industries Respond Splendidly

Great Success of the Fourth Liberty Loan Promoted by Liberal Subscriptions of Manufacturers and Many Thousands of Employees Throughout the Country

In making the fourth Liberty loan a magnificent success, the iron and steel industries of the country have done their full part. The exact amount of subscriptions from those engaged in these industries will never be known, but that they were very large is true beyond all question. Splendid results were accomplished in spite of influenza, which interfered seriously with meetings in many parts of the country.

New York's Great Total

In New York, in obtaining the amount of subscriptions needed to acquire the total of $1,800,000,000 the two important committees on Machinery, Machine Tools and Railway Supplies and Hardware, Metals and Allied Trades did their full part, the former committee obtaining subscriptions amounting to $43,000,000, and the latter committee $96,000,000. Among the late subscriptions in New York were the following:

Bethlehem Steel Co. (add'l), $5,000,000; Westinghouse Elec. Mfg. Co., $2,000,000; American Locomotive Co., $1,500,000; Singer Mfg. Co., $1,500,000; Western Elec. Co. (add'l), $1,250,000; New Jersey Zinc Co. (add'l), $1,025,000; American Vanadium Co., $1,000,000; Phelps-Dodge Corp. (add'l), $1,000,000; Marlin-Rockwell Corporation, $1,000,000; American Smelting & Refining Co. (add'l), $1,000,000; American Brake Shoe & Foundry Co. (add'l), $1,000,000; American Metals Co. (add'l), $1,000,000; American Car & Foundry Co., $1,000,000; Studebaker Corporation of America, $700,000; American Can Co. (add'l), $700,000; Worthington Pump & Machinery Corporation (add'l), $515,000; E. W. Bliss Co. (add'l), $430,000; American Locomotive Co. (add'l), $400,000; Singer Mfg. Co. (add'l), $350,000; Midvale Steel & Ordnance Co. (add'l), $334,000; Crucible Steel Co., $250,000; American Brass Co. (add'l), $250,000; Republic Iron & Steel Co. (add'l), $250,000; Hillside Coal & Iron Co., $200,000; Hillside Coal & Iron Co. (add'l), $100,000; Locomotive Superheater Co. (add'l), $200,000; Combustion Engineering Corporation, $100,000; Savage Arms Corporation (add'l), $100,000.

Chicago Iron and Steel and Machinery "Over"

The iron and steel industry of Chicago and vicinity exceeded its quota of $17,000,000, and did so without outside aid to the extent which had been expected. Hard work and many plus subscriptions won success. All of the sub-divisions of the iron and steel committee, headed by S. J. Llewellyn, president Interstate Iron & Steel Co., did splendidly, one of the first of the sub-committee to more than make good being that embracing blast furnaces, the vice-chairman of which is R. S. Dutton, of Pickands, Brown & Co. This division with a quota of $1,750,000, rolled up $2,060,000. The Steel Corporation and its subsidiaries first turned in $3,776,150 for themselves and employees, then on Saturday added another million as a plus subscription.

To promote interest in the drive, the Inland Steel Co., Chicago, had displayed on the banking floor of the First National Bank, of that city, a series of 14 oil paintings showing the principal steps in the manufacture of war steel. Each painting was accompanied by an inscription giving the layman an idea of what was portrayed, to which some further suggestions relevant to the war had been added. The titles follow:

Blast furnaces. (Liquid fire for the Government.)
The plate mill. (Rolling plates for the Emergency Fleet.)
The 28-in. mill. (Rolling shell steel.)
Pouring into molds. (Molten steel for war work.)
The ore bridges. (Cargoes of ore for war steel.)
Charging the open-hearth furnaces. (Mixing a prescription for the Huns.)
Coke pushing. (A carload every five minutes.)
An army of highly paid steel workers.
Rolling ingot steel for the Allies.
The soaking pits. (Warming up steel ingots for the Kaiser.)
Sky-line blast furnaces. (Cooking war medicine.)
Continuous mill. (Rolling bars for war work.)
Inspecting beds. (Bar steel for the French 75s.)
Tapping open-hearth furnaces. (Hot stuff for the enemy.)

Centrally located among the pictures was a large appeal for the purchase of bonds, also in colors. It said: "The Story of these pictures.—Hundreds of plants like this supply materials for our boys in France. These plants operate day and night. They consume millions of tons of coal and coke; smelt other millions of tons of ore! employ thousands of workmen. They are run

R. L. PATTERSON

S. B. E. MC VAY

MUIR B. SNOW

E. J. KEARNEY

Prominent Workers in the Fourth Liberty Loan Campaign

Mr. Patterson is president of the American Machine & Foundry Co., New York, and was chairman of the Machinery, Machine Tools and Railway Supplies Committee of New York. Mr. McVay is secretary of the Seneca Iron & Steel Co., Buffalo, and vice-chairman of the Iron and Steel Committee of the Fourth Liberty Loan of that city. Mr. Snow is general manager of the Detroit Twist Drill Co., and was in general charge of the women's fourth Liberty loan campaign in Detroit. Mr. Kearney of the Kearney & Trecker Co., milling machine manufacturers, Milwaukee, was director of the Fourth Liberty Loan for Wisconsin.

with one aim—the winning of the war. To keep them running and to support all our war activities, costs billions of dollars. Uncle Sam asks you to lend him the money by buying Liberty bonds. Buy all you can. Keep all you buy. They are the best investment on earth. Every bond buyer a patriot—ever patriot a bond buyer. Americans never lag! It's great to be an American!"

The Chicago Machinery Division, of which E. P. Welles is chairman, filled its quota of $6,800,000, and then did better, but the exact figures are not yet available. The climax was capped when it was announced that the International Harvester Co., and its employees had made plus subscriptions of over $2,000,000.

Mr. Welles expresses gratification with the allotments made to his division and to Chicago by Eastern machine-tool manufacturers. Practically every firm maintaining a branch house in the city responded. The machinery division held over 75 meetings during the campaign, at one of which 8000 persons were present, while others were nearly as large. The list of subscriptions is entirely too inclusive to permit of mention of the many firms which did a splendid part.

Response of Milwaukee

Incomplete returns received by E. J. Kearney, Milwaukee, director of the Fourth Liberty Loan campaign for Wisconsin, indicate that the minimum quota for this State of $100,500,000 has been exceeded by a fair margin. The city of Milwaukee, with a minimum quota of $32,640,000, has reported total subscriptions exceeding $37,000,000 and it is expected that complete returns will show an even larger amount. Director Kearney is head of the Kearney & Trecker Co., Milwaukee, manufacturer of milling machines, and has devoted his entire time without compensation for the past four weeks or more to the work of the campaign.

The allotment of the metal industries group of Milwaukee County, under the direction of C. R. Messinger, Sivyer Steel Casting Co., was $7,695,000. The total subscriptions so far reported aggregate $8,200,000.

Buffalo Subscribes $64,916,900

Buffalo went over the top at 6 o'clock last Saturday night with $3,268,500 in excess of its quota of $61,648,400. Complete tabulation of subscriptions, the executive committee expects, will add at least $4,000,000 to the total of $64,916,900 reported at that time.

At 6.30 Saturday evening, about 1000 of the committee workers gathered at a dinner at the Iroquois Hotel to celebrate the event, which recorded Buffalo's answer to the German war-makers, and which was in accord with the response of the entire nation.

The total amount raised by the Iron and Steel Committee was $8,942,600, or 30 per cent more than its allotted amount. Some iron and steel interests increased their original subscriptions to make sure that the committee's quota would be reached, the Lakawanna Steel Co., adding $300,000, making $800,000 in all.

The American Radiator Co.'s subscription was $325,000; Farrar & Treffts Boiler Works $125,000 and the American Brass Co., $225,000.

The employees of most all of the iron and steel plants did remarkably well. The 417 men at the Buffalo Union Furnace Co., subscribed $175,000, an average of $326. Employees of the Seneca Iron & Steel Co., 442 men raised $138,750, averaging $314. Employees at the drop forge plant of the J. H. Williams Co., averaged $116 per man and at the plant of the Otis Elevator Co., $112 per man.

The total of subscriptions of the machine shop committee was $1,655,000, 10 per cent more than its quota of $1,500,000.

The Scrap Metal Committee raised $423,450; 30 per cent additional to its quota of $325,000.

South Does Its Part

BIRMINGHAM, ALA., Oct. 21.—It was a long pull, but a strong one and the day before the expiration of the fourth Liberty loan drive Birmingham came under the wire with her quota of $9,300,000 and before Saturday evening it had passed the $10,000,000 mark. This is in accordance with the Birmingham record in every patriotic call—the quota and more. The industrial committee headed by T. C. Fairbairne, Southern manager of the Republic Iron & Steel Co., did especially valiant work. The Tennessee company's subscription of $1,250,000 was the largest, but all the iron and steel works subscribed generously and no one is claiming to have done best. From convicts in the coal mines to free workers in steel mills individual subscriptions by men laboring in the industrial field were generous in the extreme.

IRON AND STEEL COMMITTEE, FOURTH LIBERTY LOAN, BUFFALO.

1, Stanley B. DeLong, American Radiator Co.; 2, Edw. Kener, Buffalo Cooperative Stove Co.; 3, Wm. G. Houck, Buffalo Structural Steel Co.; 4, Wm. Armstrong, U. S. Drawn Steel Co.; 5, W. H. Kennedy, Corrugated Bar Co.; 6, W. J. Golden, Ferguson Steel & Iron Co.; 7, C. A. Collins, Buffalo, Union Furnace Co.; 8, Hugh Kennedy, Rogers-Brown Iron Co.; 9, Guy A. Hager, Lackawanna Steel Co.; 10, Geo. W. Donavan, American Rolling Mill Co.; 11, D'Arcy Roper, Acme Steel & Malleable Co.; 12, D. C. Morrow, American Sheet & Tinplate Co.; 13, Henry D. Miles, Buffalo Foundry & Machine Co., chairman of committee; 14, W. C. Nixon, assistant secretary of committee; 15, Fredk. C. Deming, Carnegie Steel Co.; 16, J. C. Trefts, Farrar & Trefts; 17, Frank R. Moll, Ford & Enos, secretary o committee; 18, A. L. Jones, Copper & Brass; 19, Edgar F. Wendt, Buffalo Forge Co.; 20, Eugene McCarthy, Beals, McCarthy & Rogers; 21, E. C. Strong, Atlas Steel Castings Co.; 22, B. E. McVay, Seneca Iron & Steel Co., vice-chairman of committee; 23, Chas. W. Pearson, Buffalo Foundry & Machine Co.

Cleveland Exceeds Quota

CLEVELAND, Oct. 21.—Cleveland hoisted its honor flag Saturday afternoon after reaching its quota at noon in the fourth Liberty Loan campaign. With a quota of $112,000,000, total subscriptions tabulated at the close of the campaign amounted to $116,626,300 and pledges not yet turned in are expected to bring the total up to $120,000,000. The closing week in the campaign was a strenuous one. Subscriptions lagged during the first two weeks and the campaign hustlers started the last week with the handicap of all indoor meetings barred because of the prevalence of the

Spanish influenza. Responding to the slogan, 'Double up," many individual companies and individuals purchased additional bonds to the amount of their original subscriptions and other large subscriptions brought the totals in the last few days beyond expectations. With efficient sales organizations in the manufacturing plants, most of the large industrial concerns reached or exceeded the quotas assigned to their employees. Workmen were shown that buying a bond was not the extent of their obligations, but that they should subscribe to the full extent of their ability and they responded liberally. Out of over 1500 industrial companies, reports up to Monday showed that over two-thirds had subscribed their full plant quotas and many were still to be heard from. The industrial sales committee having general charge of subscriptions in industrial plants started out to sell $25,000,000 and it apparently reached its goal.

Cleveland subscriptions not previously reported include the following:

American Steel & Wire Co., Cleveland employees, $1,362,000; Cleveland Cliffs Iron Co., additional, $1,000,000; McKinney Steel Co., additional, $1,000,000; McKinney Steel Co., employees River plant and general offices, $1,075,000; White Motor Co., additional, $1,000,000; Pickands, Mather & Co. interests, additional, $1,000,000; National Acme Co., $600,000; M. A. Hanna & Co., additional, $500,000; Samuel Mather, additional, $500,000; American Steel & Wire Co., $610,000; Otis Steel Co. and employees, additional, $500,000; Park Drop Forge Co., $400,000; McMyler Interstate Co., additional, $325,000; Hydraulic Pressed Steel Co., employees, $324,000; McMyler Interstate Co. employees, $301,000; National Acme Co. employees, $275,000; Wellman-Seaver-Morgan Co., $275,000; Youngstown Sheet & Tube Co., $250,000; Price McKinney, additional, $250,000; Hydraulic Pressed Steel Co. and Cleveland Welding & Mfg. Co. additional, $250,000; Cleveland Machine & Mfg. Co., $250,000; Cleveland Automatic Machine Co., $200,000; Eberhard Mfg. Co., $200,000; Cleveland Hardware Co., total, $520,000; Wellman-Seaver-Morgan Co., $175,000; Cleveland Twist Drill Co., $170,000; W. G. Mather, additional, $150,000; Peerless Motor Car Co. employees, $136,700; National Screw & Tack Co., $150,000; National Lamp Works of General Electric Co., $150,000; Templar Motors Corporation, $132,000; Lake Erie Iron Co. employees, $130,000; F. B. Stearns Co., $125,000; Bourne-Fuller Co., additional, $125,000; National Malleable Castings Co., additional, $125,000; Steel Products Co. employees, $117,000; Van Dorn Iron Works, additional, $100,000; Steel Products Co., additional, $100,000; Ferry Cap & Set Screw Co., additional, $100,000; Atlas Crucible Steel Co., $100,000; Champion Machine & Forging Co., $100,000; Upson Nut Co., additional, $100,000; Upson Nut Co. employees, additional, $95,000; Cleveland Crane & Engineering Co., $100,000; Matthew Andrews, $100,000; Oglabay, Norton & Co., additional, $100,000; Cleveland Automatic Machine Co., employees, $100,000; Parish & Bingham Co., $100,000; Lakewood Engineering Co., $85,000; Standard Steel Castings Co., $85,000; Bardons & Oliver, $75,000; Motch & Merryweather Machinery Co., additional, $50,000; B. F. Bourne, additional, $50,000; W. M. Pattison Supply Co., additional, $50,000; Ajax Mfg. Co., additional, $50,000; Superior Foundry Co., additional, $50,000.

Lackawanna's Fine Showing

The Lackawanna Steel Co.'s employees, at its plant at Lackawanna, N. Y., subscribed $2,137,850 to the fourth Liberty loan, which amount is considerably over "double the third." The average per subscriber was $234. By departments, the averages per subscriber were as follows: Blast furnaces, $214; coke oven department, $234; No. 1 open hearth, $361; No. 2 open hearth, $338; No. 1 rail mill, $252; No. 2, 3, 11 mills, $231; Nos. 6 and 9 mills, $352; electrical, $400. In the rail mill department the employees have so far this year subscribed for the third Liberty loan, Red Cross, War Savings Stamps and fourth Liberty loan, $400,000, or a little over $600 per man employed.

St. Louis the Leader

ST. LOUIS, Oct. 19.—The St. Louis Federal Reserve district went over the top a full day ahead of the designated "zero hour," and as in the case of the third Liberty loan campaign, ahead of any other district in the country. The Eighth Federal Reserve district, comprised of seven Middle Western states with headquarters at St. Louis, to-day had subscribed $266,971,500 against a quota of $260,000,000. The city of St. Louis oversubscribed its quota of $75,000,000 by at least a million dollars.

What part the iron, steel and allied industries played in the St. Louis campaign is indicated by the events of the last day of the campaign, when it was feared the city would not quite reach its objective in the fourth Liberty loan campaign. When it was announced this morning that the city was about $5,000,000 behind the following firms among others raised their subscriptions as follows: John T. Ryerson from $50,000 to $100,000; Fulton Iron Works from $100,000 to $200,000; Smith-Davis Mfg. Co. from $10,000 to $65,000; Key Boiler Equipment Co. from $10,000 to $30,000; Western Foundry & Sash Co. from $2,000 to $9,000; William Patent Crusher & Pulverizer Co. from $15,000 to $76,000; McQuay Norris Co. from $100,000 to $250,000; Beck & Corbett Iron Co. from $75,000 to $125,000; Curtis Mfg. Co. from $500,000 to $550,000; St. Louis Tin & Sheet Metal Mfg. Co. from $6,000 to $25,000; Warren Steel Casting Co. from $15,000 to $40,000.

Liberty Loan Notes

The employees of the Atlantic Steel Co., Atlanta, Ga., acting upon their own initiative, canvassed the entire organization for subscriptions to the fourth Liberty loan and obtained a suscription from every person, completing the canvass on the morning of Oct. 4. The company published a full page advertisement in the Atlanta *Constitution* announcing the 100 per cent subscription, giving the names and amounts subscribed by the officers and employees.

Employees of the Pratt & Whitney Co., Hartford, have subscribed $286,300 and employees of the S. K. F. Ball Bearing Co., $20,000.

At a mass meeting of the employees of the Hess Steel Corporation, Baltimore, Sept. 28, there was raised in Liberty bonds a total of $29,000 by the men and $20,000 was subscribed by the Hess Steel Corporation itself.

Employees and officials of the William Cramp Ship & Engine Building Co., Philadelphia, subscribed $2,900,000; Tacony Ordnance Co. and employees, $82,400; Pennsylvania Flexible Tube Co., $59,000. Employees at the plant of the Merchant Shipbuilding Co., Harriman, subscribed close to $500,000. The Landis Tool Co., Waynesboro, reports a 100 per cent subscription from employees at the works, with total of $153,700. The Standard Steel Works, Lewistown, subscribed $250,000. The International Motor Co. and employees, Allentown, subscribed $80,000. Among the 100 per cent plants at Allentown are the American Steel & Wire Co., Crane Iron Co., Bradley Pulverizer Co., and the Empire Steel & Iron Co., Reading Iron Co., and L. F. Grammes Co.

At Pittsburgh, one of the finest showings has been made by the West Penn Steel Co., where 994 employees subscribed $236,900; at the plant of the Pressed Steel Car Co., 1412 employees subscribed $165,000. Near the close of the campaign the Koppers Co., officials and employees, showed a total subscription of $597,750. The Aluminum Co., of America, subscribed $2,000,000, and the American Gulf Refining Co., a like amount. At Braddock, 7161 employees of the Carnegie Steel Co., subscribed $1,088,460. Other Pittsburgh subscriptions were: Lockhart Iron & Steel Co., $300,000; Duquesne Steel Foundry, $120,000; Pittsburgh-Des Moines Steel Co., $49,850; Oliver Iron & Steel Co., $800,000.

The Crucible Steel Co. of America, 104 Magnolia Street, Syracuse, N. Y., is planning to operate the works of the Cayuga Tool Steel Co., Ltd., Auburn, recently acquired under Federal Court proceedings for a consideration of $170,050, as a branch of its Syracuse plant. The plant will be operated under the name of the Auburn Works of the company, and will be devoted to the production of fine quality steel for Government use. While the plant is not fully complete, it is proposed to inaugurate immediate activities, giving employment to about 200 men with present facilities, and to arrange for necessary construction work to complete the entire works.

No Increase of $93,000,000 for Neville Island

Extensions There Would Interfere with Other War Work, House Committee Decides —More than 8000 Cars a Month for France

WASHINGTON, Oct. 22.—After the Appropriation Committee had trimmed more than $2,500,000,000 out of almost $8,900,000,000 asked by the War and Navy Departments the House of Representatives passed the "first deficiency appropriation bill" setting aside $6,345,755,666 for war expenses. Of this sum $2,487,405,890 is in cash and $3,858,349,776 in authorizations. The most important item which the Appropriation Committee rejected was an appropriation of $93,000,000 asked by the War Department for the extension of the plant at Neville Island. This is the only sum asked by the War Department to whose omission that department did not accede. Almost all of the $2,500,000,000 clipped from the estimates was agreed to by the witnesses who appeared before the committee. In many cases it developed that the estimates had been carelessly made and there was no real objection to their sharp reduction. The expansion of the Neville Island project was dropped by the committee because it believed that the expansion of that plant at this time would materially interfere with the steel supply, to say nothing of labor, for other war projects.

"The Neville Island project," testified General March, Chief of the General Staff, "was entered upon by the War Department at a time when the present increased military program had not been approved and, in fact, had not been developed to the extent it is now, and when it seemed inevitable that the war might last until 1920. The proposition was considered not only in the light of furnishing a big gun plant for our armies in France but it was planned to build a part of the plant for ammunition, which would furnish the ammunition side by side with the big guns themselves, and would lead us ultimately to replace the smaller caliber big guns in our seacoast fortifications, which had become obsolete practically by the development of these guns of even larger size than we had considered—16 and 18-in. guns. The program was considered also from the possibility of furnishing the Navy with gun construction for their very large guns, which we are now going to put on the modern battleships, replacing the smaller guns used before; and it was thought it would be well worth while for the United States to go into this thing from the standpoint not only of what would happen during this war but what would happen after the war was over. On the combined basis of those two facts the program has grown from the original $38,000,000 or $40,000,000, which we originally asked for to $140,000,000 in round numbers."

"That involves, of course," said Chairman Sherley of the committee, "a certain amount of expenditure in the way of steel, both for the plant and for the guns, and for labor both in erecting the plant and building the guns. Is it thought desirable to divert labor which would otherwise be available for the rest of your ordnance program to this work?"

"I have taken that problem up with the Secretary of War," replied General March, "and we thought it would be desirable. We have been approached from the other standpoint, by demands made by the War Industries Board to cut down the structural steel necessary to put up this big plant. It means great cranes for handling enormous ingots and all that sort of thing. We decided to make the recommendation to this committee to go through with the project, with a clear explanation of what it meant, namely, that this would not come into the immediate drive of early next year, and could only come into the program toward the end of the year, but would furnish to the Government for all time a plant which would keep up the entire coast artillery program, whatever it was, and also help out the Navy."

"How far have you proceeded with this program?"

"They have entered into contracts for approximately $10,000,000 worth of machinery," interposed Brigadier General Odus C. Horney. "They have also entered into a contract with the steel company for erecting the plant, with the owners of the land for the land, and they have reached the point of breaking ground for the erection of the projectile shops."

The committee also took this project up with Chairman Baruch of the War Industries Board. He said:

"We were given to understand that that was one of the prime demands of General Pershing—the creation of those great guns, and that this was the quickest and apparently the only method of getting them."

"Well, to what extent will it slow down other work?"

"There will not be any for civilian needs."

"Leaving aside civilian needs?"

"It will interfere to some extent, but not to any great extent, with the other work, but even so, the military said they would prefer that above everything. Of course, it will slow up other work; it takes labor and it takes steel and it takes the most highly skilled labor; but we had to have those guns, General Pershing said, and it was of prime importance."

"Have you any idea that it is practicable to deprive the non-war industries of their activities so as to make this program a possible program in the fiscal year 1919?"

"Yes, sir," said Mr. Baruch. "The civilian population of this country, in my opinion, has not commenced to suffer the deprivations and privations that are necessary to win the war, if the war is to continue, as it looks like it will be continued."

Rails and Locomotives for France

In testimony before the committee S. M. Felton, Director General of Military Railroads, also gave some details on the railroad construction work in France. He said that the Baldwin Locomotive Works is devoting its entire output of 300 locomotives a month to fill the orders from France. The American Locomotive Co., he said, was handling the domestic question and he did not expect any serious interference with domestic locomotive requirements.

The same, he said was true of the car situation and he expected the car manufacturers to deliver 8200 cars a month, for overseas requirements, without serious interference with the domestic supply. "The rails will be furnished with a slowing down of the delivery of rails for American railroads, but the American railroads can get along. The standard rail that we have sent is 80-lb. per yard. We had at the time of the outbreak of the war 230,000 tons of 67½-lb. Russian rails in this country which had been rolled and could not be shipped, and by an arrangement made by the Secretary of War we acquired those rails and sent 50,000 tons of them abroad to be used in storage tracks and at places where the heavier rails were not required, and the balance we disposed of in this country for all the munition plants and quartermaster depots and all the Government activities. In that way we saved just that much tonnage of new rails which otherwise would have been rolled in this country. We did take 200 Russian locomotives that were here and could not be shipped and were in practically the same condition as the rails, and changed the gage and turned them over to the American railroads. Therefore, they have 200 locomotives that belong to the War Department that are now in the service of the American railroads."

ESTABLISHED 1855

THE IRON AGE

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Prosperity After War

One clear fact that can be drawn from the experience of previous wars is that prosperity depends upon economy and hard work. There is a common belief that the war will be followed by a period of prosperity, and that in turn by a period of severe depression. If correct, of what practical value is the information? How long will each period be, and what will be their relative intensities? Will the two combined, brought to a mean level, represent more or less prosperity than would have obtained had there been no war?

Our Civil War was followed by eight years of very great industrial activity. The depression that followed showed that there had been more activity than real prosperity, for if the prosperity had measured up to the activity, there would have been more real wealth and more usable facilities than were found when the reckoning began, at about the time of the Jay Cooke failure of Sept. 18, 1873.

The Franco-Prussian war of 1870 was followed by great activity in the United Kingdom and on the Continent, but there is one very important fact that some half dozen years after that war ended the discovery was made that France, the victim, was much more prosperous than Germany, the victor. There is important information in that fact. France was defeated and had to pay a huge indemnity. It was imperative that the French work hard and economize. Germany received the indemnity and indulged in extravagances.

War is a tremendous quickener of thought, we are told very often; but what kind of thought? War teaches men the benefits of co-operation and develops new methods of doing things; but on the other hand war is extravagant of money and materials, for they must be used lavishly to speed victory and save lives, and in that respect war does not set a desirable pace in economy. Men are left with an unusual enthusiasm about country, State, county, municipality and are eager to indulge in great works, public buildings, for instance, that promise more gratification to the feelings than yield in income either in money or in material benefit.

Briefly, war leaves men with a host of new sensations, new feelings, new aspirations. Some are good, lastingly beneficial, some are not. It is necessary to discriminate, to weigh the balance of these forces to see which will be predominant over the long future, and also to determine which will act first and which will act at the later time. The one set tends to produce immediate prosperity, the other to produce eventual depression.

No new thought is here proposed; merely a suggestion that the influences be analyzed and segregated, so that when peace comes each may be recognized and its strength gaged. The ordinary view is that what prosperity comes will be produced by the stimulus of war, and the later period of depression is referred to vaguely as the period in which the world will pay for the war. Such references are altogether loose and unconvincing. We shall not pay for the war in a period of depression. Men may receive punishment then, but men do not pay when they are not working. If there is punishment it will be punishment for extravagances. There may be forced economy at the time, but it is poor policy to work first and economize afterwards.

A favorite theory to account for alternating periods of activity and depression is that the depressions are caused by the sinking of too much capital, in times of activity, in works that are not sufficiently productive. Whether the theory be the correct one to explain what has occurred in the past, it does clearly furnish a solid viewpoint from which to consider and measure many of the things that are going to occur after this war. If too much capital is locked up in enterprises not certain to prove permanently productive, both the period of activity and the period of depression will be correspondingly accentuated. The first essential for getting over the war is to work hard and economize. The next is to see that capital is tied up in the right sort of projects, enterprises that will economize material and labor and produce things that are really needed.

There must be no six-hour day and no set of conditions that will encourage idleness. There must be wage rates in proportion to cost of living that will require the workman to work, allowing him to save money if he will, but not to save for idleness hours that should be spent in work. There must equally be conditions that will require the captain of industry, the enterpreneur, the man with brains, to work. Perhaps a little too much

thought is given to the "relations" between these two, as an abstract. If the subject be approached from the elementary basis of encouraging both to work the "relations" between them may take care of themselves to a greater extent than many now seem to think. Economy and hard work on the right things will produce not temporary but lasting prosperity. The influences of the war are to be gaged according to their effects in producing economy or extravagance, hard work along right lines or idleness and poorly applied energy.

Steel for Essentials

Another chapter in the regulations for the distribution of steel was started last week when the War Industries Board announced that it would grant priorities in favor of certain consuming industries which have agreed to curtail their operations in accordance with the desire of the board. In the main the industries affected by the new practice—only a few have been named thus far—are industries that had a place on the preference list but no priority.

Experience is the best guide, and the clearest indication of the steel shortage is the experience of the past four months, to the effect that a place on the preference list promulgated under date of June 6 has not given the holder a supply of steel. It will be recalled furthermore that the establishment of class D steel, steel that might be left after the preference list had been taken care of, was assumed at the time to represent actual steel, whereas experience has shown that instead of representing steel it has done little more than serve to round out the nomenclature.

The granting of priority orders does not, of course, increase the total supply of steel available, nor does it even assure the holder of the priority order a supply of steel. The one thing it certainly does is to decrease the quantity of steel that may be left for distribution in accordance with the preference list. Extensive as is the machinery of the War Industries Board, it has not been sufficient to prosecute rapidly the work of reaching agreements with steel consumers as to limitations in their use of steel, a prerequisite to the granting of the new class of priorities now contemplated. And as the preference list is very nearly a dead letter, by reason of there being so little steel available for it, the distribution of steel for commercial purposes is in rather an involved state.

War-time conditions have served to bring out in emphatic manner a fact that steel producers have often urged—that except for very minor exceptions in point of tonnage, steel is a necessity and not a luxury. When search was made repeatedly for steel consumption that could be eliminated as "unessential" scarcely anything was found. Steel is the backbone of industrial life, and it is a necessity in the household as much as in the factory. The case of the household is particularly interesting, in that it illustrates how far a small quantity of steel will go in providing what are regarded as the necessities of life. Among the items for which curtailment programs were arranged last month were included baby buggies, clothes wringers and refrigerators. Only a small quantity of steel can be saved by curtailing the production of these articles, yet it is obvious that to deprive the household of them would be distinctly inimical to the general war program, which involves the utmost conservation of human energy. If the mother must carry her child instead of using a baby buggy her efficiency is much reduced, and so is that of the washerwoman without a clothes wringer, while the refrigerator is an important agency in the conservation of food.

There is another aspect to this steel shortage, however. The shortage of steel has been commonly gaged by the quantities that have been shipped, or have failed of shipment, to various consuming industries. It is a simple matter for a producer, with his orders scheduled, to determine the prospects of shipping on a B-2 or B-8 priority order, or to an industry that lies half way down the preference list, and the steel shortage has been judged largely by showings of that character. The actual test, from the viewpoint of the public's needs, is whether it is able to obtain the manufactured goods. Between the mill shipment of steel and the purchase at retail of the manufactured goods lie the unconsumed stocks of steel in manufacturers' hands, and the stocks of finished wares of manufacturers, wholesalers and retailers, and thereby a very large cushion or spring has been provided. The shortage is not so great from the viewpoint of the civilian purchaser. This difference has an important bearing on the prospects for steel demand in case peace comes clearly into view. The demand for steel at that time will rest largely upon the judgment, or whim, of the steel buyer.

Semi-Steel Shells

Many interesting features of practice in the manufacture of semi-steel shells were made public for the first time at the recent foundrymen's convention in Milwaukee. No doubt, as a result of this meeting and of later conferences some definite program as well as instructions to foundrymen undertaking such work will be developed. Much remains to be done if successful quantity production is to be realized in line with the expectations of the Ordnance Department.

The recital at Milwaukee of the details of French practice was highly instructive. The manufacture of semi-steel shells is quite a different proposition from that of steel shells. In both cases certain physical specifications have to be met. In steel shells the meeting of these is aided by certain heat treatments. But the semi-steel shell is not heat-treated, and the meeting of the specifications is almost entirely a matter of proper mixtures, melting and casting. One outstanding fact of the discussion at Milwaukee was the necessity of regulating the entire metallurgical process by a competent metallurgical department.

Another feature emphasized was that of machining. While the evidence presented did not make this a really complicated matter, it is by no means a simple one. The proper finishing of a hollow-cast shell is vitally important from a ballistic point of view and present plans involve many more steps than have been taken hitherto in

this country. However, it is not a matter that should frighten the progressive manufacturer.

It was also brought out that no company should undertake the manufacture of semi-steel shells unless it can turn out at least 1000 shells per day. This should not be a barrier, as there are numerous plants equipped to go ahead with the undertaking on that scale.

The semi-steel shell is a new departure in this country, but the successful prosecution of the war now calls for the manufacture of many millions of such shells in American plants, in spite of the early lukewarmness of certain ordnance experts. While the undertaking is a prodigious one, its successful prosecution seems well assured. Indeed, it is not too much to expect that the American contribution to cast-iron shell manufacture will be as definite and as advanced as this country is at last making in other lines of offensive warfare.

It is getting to be a common experience to meet unattached visitors from the countries of our Allies who have come to this side on special industrial missions. Each such emissary is concerned with a problem of readjustment and is able to apply himself diligently and thoroughly to a degree not possible to the member of an official commission with its usually general object. The result is that American procedure and American products are under the microscope. The large scale operations of the war plants abroad, if at all possible, are to be converted into large scale peace product factories with all that is adaptable from the admittedly successful institutions here, including the making of articles over there for which manufacturing rights can be obtained. Our shop doors still remain open, and if markets should prove too narrow to engage the industrial nations fully, competition is bound to be that much keener because of the common knowledge of industrial processes; and efficiency, economy and conservation will still be watchwords.

Steel for River Barges

ST. LOUIS, Oct. 19.—A priority order for the steel required for the construction of a permanent fleet of 40 barges and six towboats for the Mississippi & Warrior River Waterways will be issued in the very near future, in the opinion of James E. Smith, president of the Mississippi Valley Waterways Association, who with Jackson Johnson, president of the St. Louis Chamber of Commerce, has just returned from Washington, where they conferred last week with Director General McAdoo and Bernard Baruch, chairman of the War Industries Board.

Mr. Smith presented to these officials new specifications which will reduce the amount of steel necessary for the barges from 30,000 to 20,000 tons. Within the last few days the specifications for the barges were changed so that the barges will have single instead of double bottoms. It is estimated 12,000 tons of steel plate and 8000 tons of steel angles, shapes and bars will be needed. The change was made principally to hurry issuance of the priority order. The new specifications were issued by the Mississippi & Warrior Waterways Commission.

Bids for this contract were to have been opened at New York to-day, but inasmuch as the bids were called for under the old specifications and it is expected the new specifications will be approved by Mr. McAdoo, it is possible that new bids will be called for.

CORRESPONDENCE

Conservation of Pig Iron

To the Editor: The increasing scarcity of pig iron has caused the War Industries Board to limit its consumption to essential war purposes, as mentioned in the IRON AGE recently, and such action unquestionably will receive general cooperation.

In order to effect the greatest economy, and produce the largest possible tonnage of serviceable war-purpose castings, and at the same time have a reasonable allowance of pig iron or castings for general industry, it would seem desirable, first to take steps to see that only enough pig iron is used in the foundry charges, and then, if necessary, to limit the use of pig iron in the manner proposed.

In many foundries the charges are carefully regulated, and the use of fluxes and of deoxidizers is well understood; as a result, good serviceable castings can be produced with a much smaller proportion of pig iron than is required to make castings of equal quality in foundries which do not use these aids. It is safe to say that the loss of pig iron, which might otherwise be retained for war and necessary industrial purposes, is enormous due to this failure to utilize well known metallurgical methods.

To determine the accuracy of this statement comparatively little investigation is necessary, and a few days spent in almost any of our industrial centers would serve to locate foundries in which the proportion of pig iron could be reduced materially without injuring in the least the serviceability of the castings.

In the old days, when foundry charges were often prepared by "rule of thumb", and when chemical composition was little known, high proportions of pig iron or of certain brands of pig iron were often considered necessary to produce satisfactory quality; and even within a short time we have known of a foundry in which 100 per cent pig iron was thought essential for production of machinable castings. In this foundry no deoxidizers were used, and it was not known or believed that the proportion of pig iron could be radically reduced below 100 per cent and still secure good soft castings, together with a much larger margin of profit.

In other foundries the sorting of scrap is not given the attention which it deserves, and one finds considerable proportions of grate bars and thin stove plate scrap charged into mixtures from which soft machinable castings are desired. This same scrap might be utilized for castings which are not to be machined, or they could be charged in the cupola with limestone or other flux and with deoxidizers in the ladle, so that the quality of the castings would be vastly improved over what would otherwise be obtained. The better grades of scrap could be kept for castings where special quality was desired.

Almost every foundry to-day is within reasonable distance of a testing laboratory, even if it does not have one of its own, and the results which might be gained by systematizing this work and giving definite instructions and suggestions to foundries scattered all over the country might easily be surprising, not only in the improvement in the quality of the castings, but also in the reduction of the consumption of pig iron.

As a case in point, we may mention a foundry which a couple of years ago was using 60 per cent of pig iron in its charges. Systematic grading and inspection of scrap was adopted and the usual methods of fluxing in the cupola and deoxidizing in the ladle. At the same time the proportion of pig iron in the charges was gradually reduced as the quality improved. For months past the foundry has been running upon a basis of 25 per cent of pig iron, without any complaint in the shops as to hardness, although good machinable castings were required. As a result of these changes in methods, a supply of pig iron which, under the former conditions, would have lasted for ten months will be sufficient for

two years. These results are not by any means exceptional, and they are accomplished simply by systematic oversight and by use of commonly known metallurgical methods.

What is true of one foundry is true of many others, and there is not the slightest doubt that the available supply of pig iron could be extended materially and without any lowering of the quality of castings, by means of a general system of supervision of foundry methods. This might be accomplished by a branch of the War Industries Board, partly by suggestions brought to the attention of each foundry through the trade papers, and partly by the personal visits of men trained by the board for this work.

In the present cooperative spirit on the part of the public, special attention would be given by every foundryman to suggestions and recommendations of such a board, and specialists in this line of industry undoubtedly would assist in the work.

ROBERT JOB.

Montreal, Oct. 18.

Government Ownership of Water Power

To the Editor: In the report of the meeting of the Electrochemical Society in your issue of Oct. 10, I fear that a wrong impression will be conveyed as regards my remarks on the subject of government ownership of power (page 896). I did not express opposition to government regulation of waterpower, but to government ownership, and this opposition was not based on their being "no responsibility to the voters," but just the contrary. The actual argument was in part as follows:

"In the case of the privately owned enterprise the stockholders have a very simple measure of the efficiency of their managers—dividends. In the case of the government-owned hydroelectric plants there is no measure of this kind. The man who does not use electric current will probably not consider the matter at all; the man who does use current will measure the efficiency of the management by the price he pays for it. . . The majority of the voters . . . will put in that government which will give them low rates, however inequitably and actually injurious these may be."

FRANCIS A. J. FITZGERALD.

Niagara Falls, N. Y., Oct. 14, 1918.

Steel Corporation Employees Being Inoculated with Anti-Influenza Serum

Judge E. H. Gary, chairman of the board of the United States Steel Corporation, a few days ago telegraphed to the presidents of all the subsidiary companies of the corporation that every employee would be given an opportunity to be vaccinated with anti-influenza serum. About 45,000 men of the Carnegie Steel Co., 25,000 of the National Tube Co., 30,000 of the American Steel & Wire Co. and many others have availed themselves of the opportunity and it is expected that a large percentage of the 275,000 employees will do so. Judge Gary himself and many of the officers and force of the corporation at 71 Broadway, New York, were inoculated Tuesday afternoon.

While physicians differ as to the effectiveness of the serum, practical experiments within a recent period have shown that it is worth while to try it. At the shipyards at Hog Island, out of 6500 employees inoculated, only three became victims of influenza. At the League Island shipyard, Philadelphia, out of a Group of 60 employees, 30 were inoculated and 30 were not. The result of the experiment was that of the 30 inoculated not one suffered from the influenza, while out of 30 not inoculated 70 per cent became sick with the disease. Each person is vaccinated three times, the vaccinations being three days apart.

Information as to other experiences with inoculation would be welcomed for publication.

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"The Iron Age" and Its Readers

The delay in mailing this issue of THE IRON AGE is due to a strike of press feeders in New York for a 25 per cent increase in wages. Like some other strikes of recent date it was unauthorized by the union and was in violation of an agreement between the press feeders and the employing printing houses, which runs to March, 1919. It is hoped that our readers will not be put to any inconvenience by the strike beyond the present week.

Employers will want to study the system of employee representation adopted by the Bethlehem Steel Corporation, of which details are given on other pages. Monthly meetings are provided for and an "annual joint conference." Announcement is made of the basic principle that acceptance of the plan in no way affects the right of the employee to belong to a labor union.

After-War Problems of the Metal Trades

The Cancellations of Munitions Contracts, the Marketing of Accumulated Government Material and the Balance of Trade with Europe

Problems that must be met by American industry after the war—the questions of continued Government control; of labor; of foreign markets; of cancelled munitions and other war contracts; of high prices; of the lines of production to which hundreds of plants now on war work may turn when peace comes; of the changes that will come from the increasing standardization of products—were subjects of discussion at the 13th annual convention of the Associated Business Papers, Inc., held at the Hotel Astor, New York, on Oct. 20 and 21. This is a national organization of trade and technical journals and includes all the leading publications in those lines. It was brought out prominently in the addresses that the trade press had a responsibility in the making of sound sentiment on the problems of the reconstruction period such as it had never faced before, and the importance of measures of preparation for the after-war period was strongly presented. There was a disposition to call in question the delay at Washington in setting on foot measures of preparedness for meeting the situation in which business will find itself when peace comes.

From the presidential address of Arthur J. Baldwin, vice-president McGraw-Hill Co., New York, the following is taken, dealing with some aspects of the coming readjustments as affecting the metal-working industries:

The Labor Shortage

"The year before us will be a year of readjustment, a year of reconstruction. The problems that will be presented will be more momentous than those of the year that is past. There is a great shortage of labor in the world; 50,000,000 men in the four years have been called to arms and 150,000,000 workers have been withdrawn from normal activities and concentrated on war production. Several million men have been killed; millions more have been incapacitated forever for productive service. It is a world shortage of labor. This shortage is partly being met by the readjustment of our ideas as to the proper sphere of woman. Despite this readjustment which has been going on here as well as abroad, unprecedented conditions exist. The high prices paid to war workers have injected an element of unrest into all labor. The constant shifting of labor from one form of employment to another has resulted in vast inefficiency. By actual figures one of the subway contractors demonstrates that the cost of his work over his estimates is 100 per cent. This 100 per cent increase results from (a) 25 per cent increase in wages paid and (b) 75 per cent is due to the inefficiency of common labor. This inefficiency is so manifest in every line of employment that it presents to the manufacturer a grave problem. Industrial centers have been shifted, new beehives of industry have sprung up based upon the production of war materials. As a people we little realize the extent to which all our endeavors are going into war material. We know from the huge appropriations of Congress that the cost is great. We know from personal observation that hundreds of thousands of men are thus employed—but the magnitude of our war program is beyond our grasp.

Cancellations of War Orders

"A major in the Ordnance Department said to me last week that 75 lineal miles of blue print, brown print and tracing cloth are required each month to convey the details of the mechanical war program of the Ordnance Department to the manufacturers who are transforming these plans into iron and steel.

"This year the Ordnance Department alone has an average expenditure of $15,000,000 a day—$15,000,000 each day to produce engines and instruments which tomorrow, we pray God, will be useless forever. If we assume that 80 per cent of such cost is for labor (and such estimate is low), then the Ordnance Department alone has a labor charge of $12,000,000 a day, or $4 a day for 3,000,000 men. The other branches of Government are likewise busy—the Signal Corps, the Transportation Section, the Quartermaster's Department, the Medical Corps, the Navy, the Air Service.

"Frederick Wolcott of the Food Administration says that an army of 5,000,000 men for which we are now providing means 20,000,000 workers, or a total of 25,000,000 working units withdrawn from peaceful pursuits for the industry of war. But the war will end. The Government will cease the manufacture of the instrumentalities of destruction; this is now a war to end all war forever. The Government will therefore cancel billions of dollars of contracts for munitions. Then real problems will arise. What will become of the tens of thousands of employees of powder factories, of loading plants, of chemical plants? What will become of those laborers of such towns as Hopewell, Va.? Where will the swollen populations of towns like Bridgeport and Chester find employment? How will the so-called machinist, who prior to the war never saw a lathe, find employment that can satisfy him when he thinks of the fat pay envelopes he now enjoys? How will the tens of thousands of common laborers who have been promoted in the last two years into the realm of skilled mechanics find remuneration that will maintain the living conditions with which they have surrounded themselves and their families?

"The vast industrial army that has been mobilized in this world's crisis must be demobilized, and this presents far graver problems than the demobilization of our millions who are actually in the Government service. But the problem of labor is only a portion of the problem of the manufacturer. Thousands of plants have been turned into the production of munitions. They are engaged in fulfilling huge contracts from the Government. These contracts some day will be canceled. Vast quantities of material will be partly completed and accumulations of these years of preparation will fill the storehouses of the Government, the transportation facilities of the railroads and the plants of the manufacturer. What is to become of the vast accumulation of manufactured material which was designed for the use of the war? This cannot be left in warehouses; it must be disposed of and thrown on the market.

The Dumping of Government Property

"Under date of Oct. 8 the Committee on Public Information released a bulletin in which it described a Surplus Inactive Supplies Service that had been organized in connection with the General Staff, and then went on to say that the Division of Military Aeronautics has found since Aug. 6 a surplus of supplies, more than they could use. Most of it had been junked. It gives the essential information that in a single division alone it has a list of 1200 different surplus items, including more than 50,000 units. This division (Military Aeronautics) has turned over the following surplus items: 150,000 gal. of oil worth $75,000; 417 typewriters valued at $25,000; 200 tons of hay valued at $3,000; parts for 3500 French Gnome airplane motors, listed at the time they were ordered in this country by the French High Commission at $10,500,000, but which now must be sold as junk. There are 1000 tons of these motor parts; 300 Penguin training planes worth $750,000, a type now obsolete; 128 L.W.F. airplanes worth approximately $1,427,000; 1500 J.N.L. airplanes valued at $9,000,000, now obsolete; 500 additional

motors valued at $750,000; 1500 planes for which no suitable engine has been developed; 4,500,000 ft. of ⅜-in. rope; 500 pairs of field glasses worth approximately $27,000 (found in the supply department at Omaha); at Middletown, Pa., depot, 9000 gal. of 'dope,' a preparation for wing fabric in airplane construction and worth $47,500. Other surplus supplies located included seven carloads of iron, steel and woodworking machinery found in a supply depot at Hampton, Va.

"If the single department of aeronautics in this time of war can publicly announce an overpurchase of these amounts, what will be the quantities the Government will have on hand when the war ends? How many motors; how many wagons; how many auto trucks; how many thousands of tons of steel, of copper, of zinc will the Government have on hand in storehouse and in transit and under contract which it has purchased and not used?

"How many thousands of tons of scrap steel in shells and ordnance, finished and unfinished; how many dredges and scows, and hoists, and concrete mixers, and excavators, and concrete machinery will it have on hand? What is to become of the millions and millions of dollars worth of machine tools that have been made and installed in Government-owned shops for the making of munitions and armament? What will become of the thousands of lathes, planers and drill presses that individual manufacturers have on hand which they have installed for special contracts to assist the Government? How many thousands of pounds of wool and cotton cloth and clothing must be disposed of? How many millions of pounds of food and canned goods, and horses and mules and camp equipment? Think of the number of desks, and typewriters and office furniture that must find a market. Will all of this surplus supply, which is practically the production of our industries for the last eighteen months, be thrown on the market in competition with the very manufacturers who produced them? The disbanding of the huge war machine in Governmental employees alone will create a problem. Will the high prices that a manufacturer now receives because of the shortage of production continue when the Government withdraws its support from these various industries and ceases to be a purchaser? Will the public consume goods at the prices which the manufacturer must receive if he pays prevailing wages?

"How can the manufacturer readjust his increased facilities to these after-war conditions?

Europe's Debt to This Country

"Some of you may gain the impression from the questions that I have presented that the future holds only dark forebodings for the American business man. Permit me to call your attention to another problem, the solution of which may prove the answer to many of the problems to which we have directed attention. This problem is the regulation of the flow of money to and from the old world. For the ten years preceding the outbreak of the war we were indebted to the Old World in about the sum of $10,000,000,000 for borrowed capital, and we were annually sending abroad about half a billion dollars in payment of our interest debt. We were paying huge sums to foreign ship owners for our transportation to foreign lands. We were paying foreign insurance companies huge sums for insurance premiums. Hundreds of thousands of Americans visited Europe annually and spend money freely.

"To pay this foreign indebtedness annually we manufactured and sent abroad quantities of merchandise and foods, and by this surplus of export over import we paid our foreign obligations, and in this manner the flow of money to and from the Old World was regulated.

"The war has brought about a great change in our foreign relations. For the past four years our manufacturers have sold their products abroad at fabulous prices. It is estimated that we have entirely liquidated our foreign debts, and from a debtor nation we have become a creditor nation. The Old World now owes us not less than $10,000,000,000. It will require their sending to us at least a half a billion dollars annually in payment of their interest charge. While our travelers will continue to go abroad and spend their money lavishly, the question of our own mercantile marine may change the freight conditions of the world. How can Europe pay us its annual interest charge? It cannot be from increased imports, because we want to continue to be an export nation. Then how can this be paid? This will present a national problem for our financiers, a problem which must be met. We are to become the bankers of the world—yea, we are the bankers of the world. We must finance new railroads of South America and Russia and Asia Minor. We must build electric light plants and tramways for Rome, for Moscow, for Lille, for Bagdad. We must be the purchasers of foreign securities issued to rebuild the Old World. This would seem to be the only way that the flow of money in the years to come can be regulated.

"Africa, with its rich soil capable of feeding the whole world, with its cheap labor, with its mineral possibilities, must be supplied with railroads and agricultural implements.

"Russia, rich in nature's blessings and hungry for advancement, must have better buildings, better streets, more sanitary towns and billions of dollars' worth of machinery.

"Barriers created to impede trade by the selfishness of nations will be swept away and the whole world will be one vast market.

"The problems of reconstruction are staggering. These are the problems which you as publishers of the business papers of this country must discuss. They afford opportunities for service never before presented and opportunities for leadership that demand your ablest efforts."

Export Association to Discuss After-the-War Problems

Financing foreign operations will be a subject of the annual meeting on Oct. 30 and 31 of the American Manufacturers' Export Association, to be held in New York. The speakers include Lewis Pierson, Irving National Bank, New York; George Woodruff, president First National Bank, Joliet, Ill.; Fred I. Kent, vice-president Bankers Trust Co., New York; J. H. Tregoe, secretary National Association of Credit Men, New York, and E. A. DeLima, president Battery Park National Bank, New York.

Committee reports are to be made as follows: Our ships after the war; education for foreign service; sales organization abroad; foreign advertising; foreign patents and trademarks, and commercial and trade treaties incident to peace and reconstruction.

Addresses are expected by E. M. Herr, Westinghouse Electric Mfg. Co.; H. E. Cole, Standard Oil Co. of New York; Frank H. Taylor, S. S. White Dental Mfg. Co., Philadelphia; Glen Levin Swiggett, U. S. Bureau of Education; W. W. Nichols, Allis-Chalmers Mfg. Co.; John F. McClain, Remington Typewriter Co.; John F. Fowler, W. R. Grace & Co.; Gilbert H. Montague; C. J. Warren, H. W. Johns-Manville Co.; H. L. Gemberling, Sherwin-Williams & Co.; C. W. Beaver, Yale & Towne Mfg. Co.; Lawrence Langner; F. E. Stewart, H. K. Mulford Co., and H. B. Hess, Royal Typewriter Co.

Agree on Compensation Law

For the first time all branches of organized labor in Missouri have agreed on the form of a workmen's compensation measure acceptable to them, and indications are that the law will be enacted by the next Missouri Legislature. Compensation bills failed of passage in both of the last sessions of the State Legislature because of the determined opposition of labor unions in the building trades. The bill which received the indorsement of all branches of union labor at a conference in Jefferson City, Mo., already had been approved by a large number of representative employers. In the bill as it stands concessions have been made to the building trades, more liberal provisions having been added in order to secure their support.

Iron and Steel Markets

OUTPUT IS CUT DOWN

Increasing Effect of Influenza in the Central West

Continuance of Government Control in the Period of Peace Readjustment

The discussion of peace, while it has not abated in the slightest degree the Government pressure for the fullest production of iron and steel, has caused a widespread canvass of factors in the coming readjustment. The need is recognized for keeping up some form of Government control in the transition, to reduce the period of unsettlement and guard the market against abrupt changes.

Throughout the trade there is the feeling that heavy war demands are yet to be made upon every facility of production and that is still the dominant view.

There is evidence of some increase in the influenza epidemic in the districts of largest steel production. The Carnegie Steel Co. reports 10 per cent of working forces affected against 7 per cent in the week previous. In Eastern Pennsylvania, blast furnace and rolling mill operations are still seriously interfered with, and in that section October production, instead of being a record, will fall much below that of September.

Some progress has been made in fighting the disease, and wholesale serum inoculation has been resorted to at Steel Corporation plants.

Plate production has suffered most in the East, and ship steel fabrication has been cut down both there and in the Central West, two Youngstown shops being shut down for a part of the week.

The quieting effect of peace talk has been noticed particularly in the markets for pig iron, scrap and ferroalloys, all of which have until lately shown more freedom of action than finished steel.

Some pig iron sellers are protecting themselves by the proviso that unless changed by Government action the present prices shall apply on all iron delivered under the contract. Thus if the war ended suddenly and the controlled price policy were terminated, the prices now prevailing would continue to be the basis of settlement. Consumers have not taken kindly to these riders in the case of allocated iron.

Jobbers are asking for replacements on the basis of the priority ratings to consumers to whom they sell instead of on the B priority under which all their requirements are now grouped with little or no material forthcoming from the mills.

The ferromanganese market has been easing off as production has increased, and consumers are much less disposed to tie up at the maximum price. The tendency is even accentuated in manganese ore, due in part to the uncertainties involved in peace. The future of domestic mining operations, which were stimulated by appeals from Washington, depends on the policy as to the admission of Brazilian ore. Recent offers of the latter have developed little interest on the part of furnace companies.

Inquiry for special steels has been a feature in the past two weeks. At Pittsburgh 1500 tons of vanadium spring steel and 2000 tons of chrome-silicon and chrome-silicon-manganese steels for tractors and tanks for France are about to be closed. Several thousand 6-ton tractors have been let to automobile companies and the total may run to 25,000. Seamless tubing has been bought for 5000 axles.

The makers of agricultural implements who secured preferential prices on finished steel have protested to the War Industries Board the prices on malleable castings as scheduled by the associated malleable foundries. Conferences have been held with the War Service Committee of the malleable interests but with no definite decision. The makers of malleable castings had reaffirmed for the fourth quarter the schedule of prices promulgated about the middle of the third quarter.

The distribution of 137,000 tons of barbed wire to the Allies—65,000 tons to Italy, 50,000 tons to France and 22,000 tons to Great Britain—and the setting aside of 60,000 tons for the United States have tied up most of the wire capacity for some time. Very little nail tonnage is thus left for commercial trade.

Pittsburgh

PITTSBURGH, Oct. 22 (*By Wire*).

Although Germany's peace note received to-day is apparently unsatisfactory to the United States Government and the Allies, prevailing opinion in the iron and steel trade is that peace is very near, or at least the ending of hostilities, and there is a feeling that Washington authorities should formulate a policy with regard to prices of iron and steel after peace has been declared. Unless there is a definite program as to the question of maintaining fixed prices over the readjustment period, considerable unsettlement may be the result in the iron and steel industry. There is a strong sentiment in favor of a continuation in some form of Government control of prices until the readjustment period is over. Whether the Government should fix post-war prices on a maximum or a minimum basis is a debated question. Blast furnace interests apparently favor minimum prices. In all discussion of selling prices of iron and steel after the war, the labor situation is the paramount consideration. Wages cannot come down, it is pointed out, until living costs are reduced, and conversely living costs will not come down until wages are reduced. Some Government action to reduce present high wage scales will undoubtedly be urged, though it is admitted that labor costs will not go back to the pre-war basis for some years, if ever.

Despite increased inroads made by the influenza epidemic, production of the major steel products and pig iron continues at a high rate in the Pittsburgh district. Production of some of the minor steel products is being still further curtailed owing to the large tonnages of steel going into plates, shapes, rails and shell steel. Ten per cent of the forces of the Carnegie Steel Co. were away from work last week on account of influenza, an increase of 3 per cent over the preceding week. The Duquesne and Homestead plants were the

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

	Oct. 22 1918	Oct. 15 1918	Sept. 24 1918	Oct. 24 1917
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia	$38.85	$38.85	$34.40	$34.25
No. 2, Valley furnace	34.00	34.00	33.00	33.00
No. 2 Southern, Cincinnati	37.60	37.60	36.60	35.90
No. 2 Birmingham, Ala.	34.00	34.00	33.00	33.00
No. 2, furnace, Chicago*	34.00	34.00	33.00	33.00
Basic, deliv., eastern Pa.	36.60	36.60	32.90	33.75
Basic, Valley furnace	33.00	33.00	32.00	33.00
Bessemer, Pittsburgh	36.60	36.60	36.60	37.25
Malleable Bess., Ch'go*	34.50	34.50	33.50	33.00
Malleable, Valley	34.50	34.50	33.50	33.50
Gray forge, Pittsburgh	34.40	34.40	34.40	32.75
L. S. charcoal, Chicag	38.85	38.85	37.85	35.50
Rails, Billets, Etc., Per Gross Ton:				
Bess. rails, heavy, at mill	55.00	55.00	55.00	....
O.-h. rails, heavy, at mill	57.00	57.00	57.00	....
Bess. billets, Pittsburgh	47.50	47.50	47.50	47.50
O.-h. billets, Pittsburgh	47.50	47.50	47.50	47.50
O.-h. sheet bars, P'gh.	51.00	51.00	51.00	51.00
Forging billets, base, P'gh.	60.00	60.00	60.00	....
O.-h. billets, Phila.	51.30	51.30	51.30	....
Wire rods, Pittsburgh	57.00	57.00	57.00	57.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	3.73	3.73	3.73	4.25
Iron bars, Pittsburgh	3.50	3.50	3.50	....
Iron bars, Chicago	3.50	3.50	3.50	4.50
Steel bars, Pittsburgh	2.90	2.90	2.90	2.90
Steel bars, New York	3.145	3.145	3.145	3.095
Tank plates, Pittsburgh	3.25	3.25	3.25	3.25
Tank plates, New York	3.495	3.495	3.495	....
Beams, etc., Pittsburgh	3.00	3.00	3.00	3.00
Beams, etc., New York	3.245	3.245	3.245	3.195
Skelp, grooved steel, P'gh.	2.90	2.90	2.90	2.90
Skelp, sheared steel, P'gh.	3.25	3.25	3.25	3.25
Steel hoops, Pittsburgh	3.50	3.50	3.50	....

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

	Oct. 22 1918	Oct. 15 1918	Sept. 24 1918	Oct. 24 1917
Sheets, Nails and Wire, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	5.00	5.00	5.00	....
Sheets, galv., No. 28, P'gh.	6.25	6.25	6.25	....
Wire nails, Pittsburgh	3.50	3.50	3.50	....
Cut nails, Pittsburgh	4.00	4.00	4.00	....
Fence wire, base, P'gh	3.25	3.25	3.25	....
Barb wire, galv., P'gh	4.35	4.35	4.35	....
Old Material, Per Gross Ton:				
Carwheels, Chicago	29.00	29.00	29.00	26.00
Carwheels, Philadelphia	29.00	29.00	29.00	29.00
Heavy steel scrap, P'gh.	29.00	29.00	29.00	27.00
Heavy steel scrap, Phila.	29.00	29.00	29.00	25.00
Heavy steel scrap, Ch'go.	29.00	29.00	29.00	26.00
No. 1 cast, Pittsburgh	29.00	29.00	29.00	27.00
No. 1 cast, Philadelphia	29.00	29.00	29.00	28.00
No. 1 cast, Ch'go, net ton	30.36	30.36	30.00	20.00
No. 1 RR. wrot., Phila.	34.00	34.00	34.00	35.00
No. 1 RR. wrot., Ch'go, net	30.36	30.36	29.75	28.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$6.00	$6.00	$6.00	$6.00
Furnace coke, future	6.00	6.00	6.00	6.00
Foundry coke, prompt	7.00	7.00	7.00	6.00
Foundry coke, future	7.00	7.00	7.00	6.00
Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	26.00	26.00	26.00	23.50
Electroytic copper, N. Y.	26.00	26.00	26.00	23.50
Spelter, St. Louis	8.85	8.60	9.30	8.00
Spelter, New York	9.20	8.95	9.65	8.25
Lead, St. Louis	7.75	7.75	7.75	6.12½
Lead, New York	8.05	8.05	8.05	6.25
Tin, New York	77.00	81.00	79.00	61.62½
Antimony (Asiatic), N. Y.	13.50	13.62½	13.87½	14.75
Tin plate, 100-lb. box, P'gh.	$7.75	$7.75	$7.75	....

most serious sufferers, each having about 1000 men out, and a total of 5000 men in all of the company's works were ill. Other steel companies have been affected more or less.

Distribution of 137,000 tons of barbed wire for the Allies has been arranged, 65,000 tons going to Italy, 50,000 tons to France and 22,000 tons to Great Britain. With these orders and the requirements of the United States Government, totaling about 60,000 tons, and large Government orders for wire nails, the wire mills are unable to handle anything but Government work, especially as their steel is being taken away for other products. One of the independent companies reports that its wire department has been slowed down to 35 per cent of capacity, while in no case does wire and nail production exceed 60 per cent. The wire nail situation is extremely acute, and it appears that there will be practically no nails available for the commercial trade.

Drastic restrictions upon the use of tin plate have been announced by the Conservation Division, War Industries Board. Many industries using tin plate are severely affected. Tobacco, for example, which requires 4 per cent of the total production of tin plate, is to be cut off entirely, though some modification of this ruling may be effected for overseas shipments.

Peace talk has had a quieting effect upon trading in scrap, ferroalloys and even in pig iron, although so far as the latter is concerned, many customers would gladly cover for next year if they could get the iron. Basic and Bessemer grades are particularly needed.

Pig Iron.—Pig iron producers continue to look to Washington for their instructions. No iron is being sold, except a few odd lots of off-grade. Many customers, particularly steel companies using basic and Bessemer grades, would gladly cover for first quarter and first half if the iron were available. Steel companies which buy their pig iron will undoubtedly be obliged to ask Washington to allocate it to them, as iron distributers are not disposed to consider their inquiries unless Washington so directs. With peace hovering near, producers and sellers of iron are naturally giving thought to the possibility of action at Washington continuing fixed prices for iron throughout the readjustment period. Without Government control for a period of three or six months after peace is declared, it is admitted that the pig iron trade would be greatly unsettled. As iron ore has been contracted for until next June, costs of producing iron will not be lower, it is pointed out, until there is a readjustment downward of wage scales. At present, common labor at blast furnaces costs three times what it did before the war, and of course labor costs are also an important factor in the prices of coke, limestone, scrap, etc. Facing a possible continuation of these high costs for a good many months after the war, some pig iron sellers are protecting themselves on all orders allocated to them by the Government by inserting a rider in their contracts by which the consumer agrees to take the iron at the present fixed prices unless the price should be changed by Government action. Thus, if the war should end and the fixed price policy should terminate, say, on Jan. 1, the contracts made now for delivery over any part of next year would stand at the prices now existing. Consumers have in many instances objected to this form of contract on allocated orders, as some would no doubt want to cancel their pig iron contracts if the Government contracts were terminated, but the sellers who use this form of contract have refused to put business on the books unless they are given protection in this way.

Basic pig iron, $33; Bessemer, $35.20; gray forge, $33; No. 2 foundry, $34; No. 3 foundry, $33.50, and malleable $34.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh district being $1.40 per ton.

Billets and Sheet Bars.—Shortage of sheet bars continues to restrict sheet mill operations, though there was a slight improvement last week over the preceding week, and October will probably show a better record than September. The shortage of billets for rerolling

is also very serious and many consumers in very essential lines have exceedingly low stocks.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $47.50, and bars $51, forging ingots $73, and forging billets $60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Plates.—Although shipments of plates from all mills in this district continue to be very heavy, there is complaint from fabricating shops doing work for the Emergency Fleet Corporation of a shortage of plates for fabricating ship material. Work has been largely suspended at two shops in the Youngstown district and workmen have been finding employment in other plants. We quote sheared plates at 3.25c., Pittsburgh mill, for fourth quarter.

Structural Material.—No new building projects are reported in this market, but shipments of shapes for shipbuilding and other Government work continue at a heavy rate.

We quote beams and channels up to 15 in. at 3c. at mill, Pittsburgh, for fourth quarter.

Coke.—Spanish influenza has had only a slight effect upon operations in the Connellsville coke region, but there has been a falling off in production of coke as a result of the blowing out of beehive ovens by the H. C. Frick Coke Co. During the past week, 658 additional ovens were blown out by this company, bringing the active list down to 26,727 ovens, the lowest point since June, 1915. Coke production during the week ended Oct. 12 is estimated by the Connellsville *Courier* at 322,920 tons, a decrease of 7240 tons from the preceding week. However, production of coal increased to 266,533, a net gain over the preceding week of 42,867 tons. Raising the coke to its coal equivalent, which is 484,380 tons, the aggregate output becomes 750,913, or a net gain over the previous week of 32,007 tons; both the largest aggregate and the largest gain for a single week of the year to date. As the coal saved at Connellsville by the blowing out of the Frick ovens is utilized by the by-product plant of the Carnegie Steel Co. at Clairton, Pa., there has been presumably a net gain in the quantity of coke produced in the past week. Labor supply in the Connellsville district has been fairly good despite the influenza epidemic, and operators are inclined to attribute this to the cutting off of the liquor supply through the orders of the health department to close saloons.

We quote 48 hr. bee-hive blast furnace coke at $6; 72 hr. bee-hive foundry coke at $7 and crushed coke over ¾ in. at $7.30, all in tons of 2000 lb. at oven. We quote by-product coke at $5.70 for run of ovens and $6.70 for selected foundry in all States but Alabama and Washington. To these base prices should be added the freight rate from the competing bee-hive coke district which takes the lowest freight rate to the point where such by-product coke is produced, except that there shall be added, in addition, for coke manufactured in New England 7c. or each 5c. above 60c. in the freight charges per ton (2240 lb.) of coal for water transportation on the coal used in the manufacture of such coke.

Iron and Steel Bars.—Production of commercial steel bars continues at a very much restricted rate, in some plants not exceeding 50 to 60 per cent of the normal output.

We quote soft-steel bars rolled from billets at 2.90c.; from old steel rails, 3c.; common iron bars, 3.50c.; and refined iron bars at 5c., at mill, Pittsburgh, for fourth quarter.

Wire Rods.—Production of wire rods varies from 35 to 60 per cent in various mills. The self-contained companies are diverting more and more steel from wire departments into other departments. The leading interest is reported to be operating on about a 60 per cent basis. Prices on wire rods are given on page 1057.

Wire Products.—Distribution of about 137,000 tons of barbed wire for the Allies has been definitely arranged during the past week. Of this total it is reported that Italy will receive 65,000 tons, France 50,000 tons and Great Britain 22,000 tons. Government demand upon the wire mills for nails continues very heavy. One producer says that his entire output of nails for the next 30 days will go to the Government, practically all of this being for shipment to France. The wire nail situation is extremely acute, available supplies for the commercial trade now being practically nil. Producers make no secret of the fact that it is more profitable to sell plain wire at 3.25c. base than to make nails to sell at 3.50c. With present operating costs, producers are losing, they say, at least $10 a ton on wire nails, and therefore they are restricting their output of nails to meet only Government demands. Apparently nothing short of an increase in the price will remedy the situation so far as the commercial trade is concerned. Production of nails by the leading interest is reported to average 20,000 kegs a day, which is about 60 per cent of normal, but smaller producers are not equalling this record. A leading independent reports that its entire wire department is slowed down to about 35 per cent. No word has been received here of the decision of the War Industries Board as to the extent which the manufacture of wire fencing is to be permitted. At one of the early conferences in Washington, the plan proposed was to eliminate the manufacture of wire fencing entirely, but the fencing fabricators made objection to this and pleaded that wire fencing is very essential to farmers in the raising of hogs and other live stock. It is assumed that a modified plan will be worked out by which fencing fabricators will be permitted a total of from 100,000 to 200,000 tons of steel annually, as against a normal consumption of from 500,000 to 600,000 tons. Under this plan self-contained manufacturers would not be permitted to make any fencing. A decision is expected shortly from Washington which will establish the new status of the wire fencing industry. Prices on wire products are given on page 1057.

Sheets.—There has been an improvement in the rate of production during the past week. However, production is not on a basis to take care of the essential demand and some of the larger producers are able to ship only on A priorities. A large tonnage of corrugated sheets has been distributed from Washington and several mills in this district received a share. The shortage of sheet bars is still very acute, with no immediate prospect of relief. Prices are given on page 1057.

Tin and Terne Plate.—The Conservation Division, War Industries Board, has announced in part the regulations agreed upon for the conservation of tin plate. Economies varying from 25 to 100 per cent are ordered, effective immediately, though consumers are to be permitted to use up stocks on hand or to complete articles in course of manufacture up to Feb. 1, 1919. The restrictions hit some industries with great severity. Tobacco, for example, including cigarettes, is not to be packed in tin plate, and the tobacco industry is credited with using 4 per cent of the country's entire output of tin plate. There may be some modification of this ruling as affecting overseas shipments of tobacco. Among the other articles which must not be packed in tin are candy, cocoa and chocolate, hominy, tea, coffee, crackers, nor is tin to be used in the manufacture of caskets, clocks, stamp pads, stove boards, etc., while restrictions curtailing the quantity of tin to be consumed are issued affecting many other products. Another matter soon to be decided is the question of the quantity of tin plate for which the War Industries Board will permit the War Trade Board to issue export permits. At present there are inquiries in this market for the export of from 10,000 to 20,000 boxes which are awaiting this expected action. Consumers are expected to come into the market shortly to cover for first quarter requirements of tin plate. Just what effect the possibility of an early peace may have upon the placing of this business is not yet apparent. There is nothing to be said as to terne plate, its production being at a very low rate. We quote tin plate at $7.75 per base box for fourth quarter. Prices on terne plates are given in detail on page 1057.

Hot and Cold-Rolled Strip Steel.—The demand for hot-rolled strip steel continues more active than that for cold-rolled. Production of hot-rolled is averaging slightly better than 50 per cent of normal output, while production of cold-rolled is less than 50 per cent. Government demand continues fairly good, the uses to which strip steel is now being put including booster

casings, Colt's automatic pistols, cartridge clips, motor trucks, artillery tractors, and tanks. Some makers could take more class A business, as they are shipping fairly well on class B orders. Class C orders, however, get little attention, most of the makers refusing to make definite promises as to shipments of orders in Class C.

We quote cold-rolled strip steel at $6.50 base per 100 lb., f.o.b. Pittsburgh, for 1½-in. and wider, 0.100 in. and thicker, hard temper in coils under 0.20 carbon. Boxing charge 50c. per 100 lb.

Old Material.—Talk of peace has affected the local scrap trade. Dealers have become cautious as to buying. It is doubtful if any would make commitments beyond Jan. 1, and some are considering very carefully any proposition which would involve deliveries at present prices after Dec. 1. Demand from consumers has also shown a dropping off, and dealers do not know whether to ascribe this to the peace talk or not. We quote:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	$29.00
No. 1 cast scrap (for steel plants)	29.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh	34.00
Hydraulic compressed steel scrap	29.00
Bundled sheet scrap, sides and ends, f.o.b. consumers' mills, Pittsburgh district	29.00
Bundled sheet stamping scrap	$22.00 to 23.00
No. 1 busheling scrap	28.00 to 29.00
Railroad grate bars	28.00 to 29.00
Low phosphorus melting stock (unguaranteed)	34.00
Low phosphorus melting stock (guaranteed)	36.50
Low phosphorus melting stock (bloom and billet ends, heavy plates)	39.00
Iron car axles	46.00 to 46.50
Locomotive axles, steel	46.00 to 46.50
Steel car axles	46.00 to 46.50
Railroad malleable (for malleable works)	34.00
Machine shop turnings	19.00
Cast iron wheels	29.00
Rolled steel wheels	36.00
Sheet bar crop ends (at origin)	35.00
Cast iron borings	19.00
No. 1 railroad wrought scrap	34.00
Heavy steel axle turnings	24.00
Heavy breakable cast scrap	28.00 to 29.00

Ferroalloys.—Consumers are apparently well covered on ferromanganese and spiegeleisen for the remainder of the year, and they are not anxious to buy for any part of next year. Despite the undertone of weakness in the market, sellers are not offering any concessions, so far as reported, though consumers are seemingly of the opinion that the termination of the war would bring a drop in prices of both ferromanganese and spigeleisen, which do not have the support of Government price fixing.

We quote 70 per cent ferromanganese at $250, delivered, and 16 to 18 per cent spiegeleisen, $75, f.o.b. furnace, an addition or deduction of $3.50 per unit being made when the manganese content is above or below the standard. For delivery over the remainder of the year, 50 per cent ferrosilicon is quoted at $150 to $155 and for next year at $150, delivered.

We quote 9 per cent Bessemer ferrosilicon at $55; 10 per cent, $57; 11 per cent, $60.30; 12 per cent, $63.60. We quote 6 per cent silvery iron, $42; 7 per cent, $43; 8 per cent, $45.50; 9 per cent, $47.50; 10 per cent, $50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furname, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of $2.90 per gross ton, for delivery in the Pittsburgh district.

Cotton Ties.—There is nothing new to report.

We quote cotton ties for October shipment at $1.96 per bundle of 45 lb., f.o.b. Pittsburgh.

Shafting.—Conditions are unchanged since our last report.

For fourth quarter we quote cold-rolled shafting at 17 per cent off list in carloads and 12 per cent in less than carloads, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets.—Production is curtailed considerably both by labor shortage and lack of steel. In filling direct Government orders, the makers get fair supplies of steel, but on indirect orders, they are not nearly so well taken care of.

We quote button-head structural rivets at $4.40, conehead boiler rivets at $4.50 per 100 lb. Small rivets are 50 and 10 per cent off list for fourth quarter, f.o.b. Pittsburgh.

Boiler Tubes.—There are no new features, the situation continuing as previously reported. The Government continues to take a large part of the output for marine and locomotive boilers. Discounts on boiler tubes are given on page 1057.

Wrought Pipe.—Production of welded tubular goods has been at a much better rate during October than in September. Curtailment of the output of buttweld pipe recently agreed upon with the authorities in Washington is being offset by increased production of lapweld pipe. Discounts on iron and steel pipe are given on page 1057.

Hoops and Bands.—There has been no change in the the situation. Production is about on a 50 per cent basis. We quote 3.50c., for fourth quarter.

Spikes.—The demand for both railroad and boat spikes, especially for small railroad spikes, continues heavy.

Standard sizes of railroad spikes 9/16 x 4½ in. and larger, $3.90 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, $5.25 per 100 lb.; rack bolts, $4.90 base in lots of 200 kegs or more; less than 200 keg lots, $1 per 100 lb. extra. All f.o.b. Pittsburgh.

British Steel Market

War Situation a Cause for Caution—Fuel Conditions Easier in Pig Iron

(By Cable)

LONDON, ENGLAND, Oct. 22.

Conditions in the pig-iron market are unaltered except that the fuel position is slightly easier. Transportation is still very difficult and the general feeling in the trade is one of caution owing to war news. Current quotations on various products are as follows:

Tin plate, coke, 14 x 20; 112 sheets, 108 lb., f.o.b. Wales, 33s. 6d.

Ferromanganese, $260 to $265, c.i.f. for export to America and Canada; £26 10s. for British consumption.

On other products control prices per gross ton are:

Hematite pig iron, East Coast, £6 2s. 6d.; West Coast, £6 7s. 6d.

Cleveland pig iron (export), 127s. 6d. for No. 1 and 122s. 9d. for basic. Domestic prices, 9s. 3d. below these figures.

Steel plates, ship, bridge and tank, £11 10s. to £17, according to size.

S. M. boiler plates, basis, £12 10s.

Bar iron, standard quality, basis £14 15s.; marked £17, net.

Sheet and tin plate bars, £10 7s. 6d.

Blooms and billets for rerolling (ordinary), £10 7s. 6d.; special quality, £11.

Wire rods, £21 10s. net, basis.

Contracts recently closed by the Crowell-Lundoff-Little Co., Cleveland, include the Pennsylvania Railway Co.'s $400,000 engine terminal plant at Fort Wayne, Ind.; covered craneway and concrete building for the Bridgeport Machine Tool Co., Rochester, N. Y., at an estimated cost of $175,000, and mess hall and armory for Western Reserve University, Cleveland, costing $175,000.

About 250 employees of the Lancaster Steel Products Co., Lancaster, Pa., refused to work on Oct. 11, because two of their number, John and Lewis Todd, father and son, refused to purchase bonds of the fourth Liberty loan. The company officials, following a conference, discharged the two men, and the employees returned to work.

Bernard Steuer, Easton, Pa., has acquired under lease two tracts of limestone property, totaling about 46 acres, on the Charles C. Cox lands at Pinckneyville, near Newton, N. J., including a limestone quarry which has been idle for some time. Machinery and equipment will be installed and the property operated by the new owner.

The United Alloy Steel Corporation, Canton, Ohio, has completed a new office building and on Oct. 28 will remove its general offices from Belden Avenue, N. E., to Eighth Street Extension, W. E.

The Three Rivers Machine Tool & Die Co., Phoenix, N. Y., has increased its capital from $30,000 to $130,000.

Chicago

CHICAGO, Oct. 21 (*By Wire*).

While the general aspect of the steel trade is one of monotony, the very important point is made that daily production is better than it was in September, and that was a record-breaking month. The coke supply has improved steadily in quality, and with the furnaces in good shape another record may be made, at least locally. Incidentally, orders and specifications have been running heavier with the leading interest than they did last month. Considerable Government tonnage is still hanging fire, while general instructions are being issued to hurry railroad work. It is indefinitely reported here that 10,000 cars ordered for Russia in July, 1917, for which part of material was ordered, are to be built and shipped to Russia by arrangement with some Russian authority. No effort was made to assemble the cars following the overthrow of Kerensky, but the material was kept intact, and with some slight additions of material, the cars can be made. It was understood here a week ago that 135,000 tons of rails for France were to be rolled in the East, but a local mill to-day received an inquiry asking if its original acceptance of a part of the tonnage was still good.

Pig iron for semi-steel shells is in demand, meanwhile allocations for war purposes continue, and a Southern merchant furnace has accepted a few thousand tons for delivery this year and next, then stopping. Old material, except in the case of melting steel, continues to show a trend toward weakness.

Ferroalloys.—Standard ferromanganese is moving rather slowly, with consumers inclined to take small lots to carry them along, evidently because they feel that an early termination of war will bring increased imports from England. A few cars of spiegeleisen have been sold, the product coming from Eastern furnaces. The large ferrosilicon interest has not yet opened its books for general 1919 business, but at least one small producer has taken orders for that delivery. Fifty per cent ferrosilicon for this year is quoted at $155 to $162.50 delivered.

We quote 70 per cent ferromanganese at $250, delivered; 50 per cent ferrosilicon at $155 to $162.50, delivered, and 16 to 18 per cent spiegeleisen at $75, furnace.

Plates.—Specifications by the Government are running heavier than they did last month, and the output of all producers is going in that direction.

The official mill quotation is 3.25c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers who have stock quote 4.52c.

Structural Material.—An unnamed Eastern company will supply 120 tons for 100 mine cars for the Blackhawk Coal Co. The American Bridge Co. will fabricate 178 tons for a Strauss bascule span for the Causeway at Mare Island, Cal., the Government placing the order. General conditions in shapes are unchanged, the rolling of shell steel continuing to restrict production at some mills. It is stated that arrangements have been made with a Russian authority whereby 10,000 cars ordered in July, 1917, will be completed and shipped to Russia.

The official mill quotation is 3c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.27c. for material out of warehouse.

Pig Iron.—Several lots of iron have been sold and more are under inquiry for the making of semi-steel shells. A Wisconsin firm took 10,000 tons of Bessemer, but the demand is confined to no one grade, the inquiries covering iron running from 0.20 phosphorus up to high phosphorus foundry. It is a matter of proper mixing. General inquiry is as plentiful as ever, with as little iron to ship against it. Government allocation of shipments continues the controlling factor. A Southern producer opened its books to the extent of accepting 5000 to 6000 tons, 1000 tons of which is for the first quarter of next year, the remainder being for this year; then it turned down 2500 tons for this year and next on the ground that acceptance would interfere with Government allocations. Another Southern maker has not yet resumed the taking of new business except where directed by the Government. Off iron continues to be offered, but it is not moving as rapidly as was the case before peace talk started. It is reported that the International Harvester Co. is to make semi-steel shells at its McCormick and Deering plants, Chicago.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5	$38.70 to $39.00
Lake Superior charcoal, C to AA	40.70 to 42.50
Lake Superior charcoal No. 6	41.20 to 41.50
Northern coke foundry, No. 1, silicon, 2.25 to 2.75	35.25
Northern coke foundry, No. 2 silicon, 1.75 to 2.25	34.00
Northern high-phosphorus foundry	34.00
Southern coke, No. 1 foundry and No. 1 soft, silicon, 2.75 to 3.25	42.00
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75	40.25
Southern foundry, silicon, 1.75 to 2.25	39.00
Malleable, not over 2.25 silicon	34.50
Basic	33.00
Low phosphorus (copper free)	54.00
Silvery, 7 per cent	50.00

Bars.—Protest is being lodged with at least one producer of mild steel bars by consumers entitled to a B priority rating because they are not supplied with material. The mill in question has all it can do in caring for A priorities and considers B ratings only under compulsion. Makers of bar iron continue in a comfortable position, but are experiencing delay in obtaining licenses to export. Rerolling rails are as scarce as ever.

Mill prices are: Mild steel bars, 2.90c. Pittsburgh, taking a freight rate of 27c. per 100 lb.; discard bars, 3.25c., Chicago; common bar iron, 3.50c., Chicago; refined iron bars, 5c.; rail carbon, 3c., Chicago.

Jobbers quote soft steel bars, 4.17c., bar iron 4.17c., for ¼ in. thick and heavier. Reinforcing bars, 4.29½c. base. Under the new price there is no charge for twisting, but extras for sizes are quoted as per card. Shafting, list plus 13 per cent.

Sheets.—Orders entitled to an A rating are being received, in consequence of which the supply for less essential purposes is tightening. As heretofore, the main difficulty with sheets is getting sheet bars wherewith to roll them. For prices see finished iron and steel f.o.b. Pittsburgh, page 1057.

Chicago delivery out of stock regardless of quantity, No. 10 blue annealed, 5.52c.; No. 28 black, 6.52c., and No. 28 galvanized, 7.77c.

Rails and Track Supplies.—It was understood that the 135,000 tons required for use in France has been placed with Eastern mills, but fresh inquiry received to-day indicates that at least a part will be rolled at a local mill.

Standard railroad spikes, 3.90c., Pittsburgh. Track bolts, with square nuts, 4.90c., Pittsburgh. Tie plates, steel, 3.25c.; tie plates, iron, 3.75c.; f.o.b. maker's mill. The base for light rails is 3c., f.o.b. maker's mill, for 25 to 45-lb. sections, lighter sections taking Government extras.

Wire Products.—The demand for nails is very strong, with the mills far behind in their orders. The situation in fencing is that the makers could sell five times what they can make and ship. Barbed wire is scarce for domestic use, and it is felt that a great after-war demand is accumulating. For prices, see finished iron and steel f.o.b. Pittsburgh, page 1057.

Cast Iron Pipe.—The Akron, Ohio, inquiry for 5050 tons, which was to have been settled Oct. 18, is still open, but no other municipal propositions are reported.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., $69.80; 6-in. and larger, $66.80. Class A and gas pipe, $1 extra.

Bolts and Nuts.—Only essential needs are being considered by the manufacturers and these must be accompanied by affidavits. It is observed that consumers, while buying steadily, are not committing themselves to large quantities, evidently desiring to be prepared for any change which may come in conditions. For mill prices, see finished iron and steel f.o.b. Pittsburgh, page 1057.

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to ⅞ x 4 in., 37½ per cent off; larger sizes 25 and 5 off; carriage bolts up to ⅞ x 6 in., 32½ off; larger sizes, 20 off; box pressed nuts, square, tapped, 75c. off; hexagon tapped, 55c. off; coach or lag screws, gimlet points, square heads, 40 per cent off. Quantity extras for nuts are canceled.

Old Material.—Peace talk has unquestionably caused some buyers to hold back, but this does not apply to steel scrap. In other districts, especially in parts of Ohio, steel mills appear to be so short of melting steel that what they get goes direct from cars to furnaces. It is probable that licenses will be given for the shipment of steel from this district to these mills. Other grades are not so strong, although prices have not yet been revised. It is to be regretted if premature talk of peace causes the yard men to become less vigorous in collecting and preparing material. The Rock Island and Soo lines have issued lists. No price changes are reported.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Old iron rails	$39.00
Relaying rails	$55.00 to 60.00
Old carwheels	29.00
Old steel rails, rerolling	34.00
Old steel rails, less than 5 ft.	34.00
Heavy melting steel	29.00
Frogs, switches and guards, cut apart	29.00
Shoveling steel	29.00
Heavy steel axle turnings	24.00
Per Net Ton	
Iron angles and splice bars	$34.82
Iron arch bars and transoms	41.52
Steel angle bars	30.36
Iron car axles	41.52
Steel car axles	41.52
No. 1 railroad wrought	30.36
No. 2 railroad wrought	29.46
Cut forge	29.46
Pipes and flues	25.89
No. 1 busheling	27.68
No. 2 busheling	20.00
Steel knuckles and couplers	30.36
Coil springs	30.36
No. 1 cast scrap	30.36
Boiler punchings	32.59
Locomotive tires, smooth	40.50 to 41.50
Machine-shop turnings	16.50 to 16.96
Cast borings	16.50 to 16.96
Stove plate and light cast scrap	25.50 to 25.89
Grate bars	25.50 to 25.89
Brake shoes	25.50
Railroad malleable	30.36
Agricultural malleable	29.00 to 30.00
Country mixed scrap	22.50 to 23.00

Philadelphia

PHILADELPHIA, Oct. 22.

Although no one expects an early termination of hostilities in Europe, possibilities as to business after the war are being given very thoughtful attention by iron and steel manufacturers and agents in this district. "If hostilities should suddenly cease," said the sales manager of an important company which has a large amount of Government business, "it would be a jolt temporarily, but almost immediately, I believe, there would be a flood of new business which would astonish the country." Continuing, the speaker said that, of course, he did not expect that the Government would continue to call for such materials as beams for trenches, of which 25,000 tons had been sent to General Pershing since June, but there would be a very active demand for structural material, plates, sheets and, in fact, nearly everything that the Government would stop taking. He believed, however, that great care should be taken by the Government in dealing with the price situation, as a sharp reduction of prices might have serious results. Among pig iron sellers, the feeling as to post bellum conditions is perhaps not as optimistic as among finished material manufacturers. One seller of many years experience said that nothing is as sensitive as the pig iron market and that if the fighting should stop and furnaces were not certain of the demand for deliveries continuing, it would be very easy for the market to soften.

It is believed that the influenza epidemic has reached the peak as far as new cases are concerned, but deaths during the past week were more numerous than in the preceding week, 5000 having been recorded. Many industries in Philadelphia, Coatesville, Pottstown and other Pennsylvania cities are suffering severely. One Warwick furnace has been banked, the Alan Wood stack reported idle last week is still out of commission and the furnace of the Northern Iron Co. at Standish, N. Y., running on low phosphorus iron, has been compelled to go out temporarily. Half of the inhabitants of Standish are sick and there has been great suffering owing to a shortage of physicians and nurses, although the company has done all in its power to relieve conditions.

Pig Iron.—The Virginia Iron, Coal & Coke Co. has announced that it has a limited tonnage of iron for delivery which it will sell to buyers who have an A-1 rating if the companies are engaged in war work. The contracts must contain the following clauses:

> Any undelivered portion of tonnage due on this contract as of July 1, 1919, is to be automatically cancelled.
>
> The prices to be paid by the purchaser for any of the materials named herein, which are shipped under this contract, shall be the price fixed for that time by proper U. S. Government agency by agreement or otherwise, as the public or market price for such material. Provided, however, that should the Government discontinue regulation of prices, then the last price determined by the Government shall be that at which any undelivered tonnage on this contract shall be shipped and paid for. Provided, further that should the last price as prescribed by the Government at time of discontinuance of price fixing be less than the cost of manufacture, then the seller will not be forced to deliver any balance due on the contract, except at a price equal to the cost of manufacture, and should this price not be acceptable to the buyer, he will not be forced to accept the balance due at a price higher than the last price fixed by the Government.

The provisions of the contract have attracted much attention. Some sales have been made under it. The policy of furnaces as to selling for the first half of 1919 varies, a majority of them now being in favor of going ahead and selling on a conservative basis, the contracts being, of course, subject to being set aside by the Government. The feeling is that it is well to try to take care of one's customers even if allocations interfere with delivery. Some buyers, especially those engaged in non-esesntial work, are anxious to place orders for their requirements, but many who are engaged in Government work are showing an indifference as to buying and express confidence that the Government will take care of them. We quote standard grades of iron for delivery in Philadelphia, except low phosphorus grades, for which f.o.b. furnace prices are quoted:

Eastern Pennsylvania No. 1 X	$40.60
Eastern Pennsylvania No. 2 X	38.85
Eastern Pennsylvania No. 2 foundry	37.60
Virginia No. 2 X	41.75
Virginia No. 2 foundry	40.50
Basic	36.60
Gray forge	36.60
Bessemer	38.80
Standard low phosphorus (f.o.b. furnace)	54.00
Low phosphorus (copper bearing, f.o.b. furnace)	51.00

Ferroalloys.—Easier conditions in the ferromanganese and spiegeleisen markets continue with rumors of shading on both alloys, but sales of spiegeleisen at less than $75 furnace and ferromanganese at less than $250 delivered, have not been authenticated. We quote 70 per cent ferromanganese at $250, delivered, and 16 to 18 per cent spiegeleisen at $75, f.o.b. furnace, $3.50 being the unit price on both alloys for variations from these standards.

Bar Iron.—The recent action of the Government in co-operation with the American Iron and Steel Institute in fixing prices on common merchant iron and refined iron and in agreeing upon definitions of these two products is an interesting illustration of what can be accomplished by working with the Government. There has long been much misunderstanding in regard to these products and it is believed that the new plan, which establishes a price of $3.50 for common merchant iron and classifies rounds and squares ½ in. and smaller and all rounds and squares over 1⅞ in. as refined iron, and provides that the prices do not apply to specifications or test iron, which are subject to negotiation, will meet general approval, although some details may be altered.

Finished Iron and Steel.—Some orders for plates, sheets and other finished materials are being entered for delivery in the first half of 1919, but this selling is being done in a very conservative way. The Government will require 700 tons of shapes for the Bellevue ware-

houses, Washington. The Cambria Steel Co. received word yesterday that it had been allocated 33,000 tons of standard rails for shipment to General Pershing. We quote plates at 3.48c.; plain structural materials, 3.23c.; soft steel bars, 3.13c.; common bar iron, 3.73c.; refined iron bars, 5.23c.; No. 10 blue annealed sheets, 4.48c.; No. 28 black sheets, 5.23c.; and No. 28 galvanized sheets, 6.48c., all Philadelphia.

Old Material.—The effects of peace talk are still being manifested in the scrap market and the consumers are not as keen to buy as they were a couple of weeks ago. The plan of the Pennsylvania Railroad to sell its scrap on contract extending from three to six months has not, so far as known, resulted in any contracts being made. We quote for delivery in Philadelphia and nearby points as follows:

No. 1 heavy melting steel	$29.00
Steel rails, rerolling	34.00
No. 1 low phosphorus, heavy, 0.04 and under	39.00
Low phosphorus, 0.04 and under	36.50
Low phosphorus, 0.06 and under	$32.00 to 34.00
Old iron rails	39.00
Old carwheels	29.00
No. 1 railroad wrought	34.00
No. 1 yard wrought	33.00
Country yard wrought	29.00
No. 1 forge fire	29.00
Bundled skeleton	29.00
No. 1 busheling	31.00
No. 2 busheling	19.00 to 20.00
Turnings (for blast furnace use)	19.00
Machine-shop turnings (for rolling mill use)	19.00
Cast borings (for blast furnace use)	19.00
Cast borings (clean)	19.00
No. 1 cast (for steel plant use)	29.00
No. 1 cast (cupola sizes)	34.00
Grate bars	28.00 to 29.00
Stove plate	28.00 to 29.00
Railroad malleable (for steel plants)	29.00
Railroad malleable (for malleable works)	34.00
Wrought iron and soft steel pipes and tubes (new specifications)	33.00
Ungraded pipe	29.00

St. Louis

ST. LOUIS, Oct. 21.

Pig Iron.—A number of small sales have been made in the week, some of standard analyses and some off the regular analysis for the grades, but the aggregate has not been important. The larger industries continue to get their supplies through allocations. The local furnace, like all others, is under control of the allocation bureau and cancellations of high priced contracts made a long time ago are coming in because of the delays.

Coke.—Practically nothing is done, the producers being sold up, including the local plant. Essential industries are getting their needs, but there is a hand-to-mouth element which is at least a little nerve trying to the producing managements.

Finished Iron and Steel.—Warehouses are supplying material under virtual censorship and at that are far behind in their deliveries. For stock out of warehouse we quote as follows: Soft steel bars, 4.24c.; iron bars, 4.50c.; structural material, 4.34c.; tank plates, 4.59c.; No. 8 sheets, 5.54c.; No. 10 blue annealed sheets, 5.59c.; No. 28 black sheets, cold rolled, one pass, 6.59c.; No. 28 galvanized sheets, black sheet gauge, 7.84c.

Old Material.—The scrap dealers have been unloading on the larger dealers and brokers, with the result that the market has softened in that division, though there has been no decided change in quotations by the larger dealers to the consumers. The larger dealers and brokers are taking in practically all that is offered and the consumers are accepting material freely, there being no embargoes in effect at any of the plants. All grades of steel are in especially strong demand as compared with the rest of the market and selling freely at Government prices and commission. The consuming industries generally are covered for the remainder of the year. The softening tendency seems altogether to be on the part of the weaker dealers who have endeavored to unload because of peace rumors and other causes, and have found the larger dealers and brokers ready to take in all that is offered at a profit. The railroad lists which appeared last week were held up for a time by Government order, but were released later and taken in at good prices by the larger dealers and brokers. We quote dealers' prices, f.o.b. customers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails	$38.50 to $39.00
Old steel rails, rerolling	33.50 to 34.00
Old steel rails, less than 3 ft	31.00 to 31.50
Relaying rails, standard sections, subject to inspection	55.00 to 65.00
Old carwheels	28.50 to 29.00
No. 1 railroad heavy melting steel scrap	28.50 to 29.00
Heavy shoveling steel	28.00 to 28.50
Ordinary shoveling steel	27.00 to 27.50
Frogs, switches and guards, cut apart	28.50 to 29.00
Ordinary bundled sheet scrap	24.75 to 25.25
Heavy axle and tire turnings	21.50 to 22.00
Per Net Ton	
Iron angle bars	$33.00 to $33.50
Steel angle bars	29.50 to 30.00
Iron car axles	41.00 to 41.50
Steel car axles	41.00 to 41.50
Wrought arch bars and transoms	40.00 to 40.50
No. 1 railroad wrought	29.75 to 30.25
No. 2 railroad wrought	29.00 to 29.50
Railroad springs	29.75 to 30.25
Steel couplers and knuckles	29.75 to 30.25
Locomotive tires, 42 in. and over, smooth inside	38.50 to 39.00
No. 1 dealers' forge	26.00 to 26.50
Cast iron borings	16.50 to 17.00
No. 1 busheling	27.00 to 27.50
No. 1 boilers cut to sheets and rings	24.00 to 24.50
No. 1 cast scrap	29.50 to 30.25
Stove plate and light cast scrap	23.00 to 23.50
Railroad malleable	28.75 to 29.25
Agricultural malleable	26.75 to 27.50
Pipes and flues	25.25 to 25.75
Heavy railroad sheet and tank scrap	24.00 to 24.50
Railroad grate bars	21.50 to 22.00
Machine shop trimmings	16.50 to 17.00
Country mixed scrap	21.50 to 22.00
Uncut railroad mixed scrap	24.00 to 24.50
Horseshoes	29.00 to 29.50

Birmingham

BIRMINGHAM, ALA., Oct. 21.

Pig Iron.—At the pace at which allocations are coming to Birmingham district furnaces and considering that stocks are a negligible quantity, they will soon cover available production. The allocations of the past week comprise around 60,000 tons, of which 38,000 tons are basic. The basic is largely for St. Louis and the Middle West territory. The makers are not desirous of this business for the simple reason that with the same time and trouble they might just as well be turning out high grades of foundry at $35 to even $40. But the manufacture of basic iron is regarded as a patriotic duty. It is estimated by those in position to know that the basic allocations in the Birmingham district now amount to as much as 140,000 tons. With only two active stocks, the Alabama Co. has been allotted 19,000 tons of basic, a great deal for that interest to take on in the face of high prices which its high silicon Clifton iron brings. The general division of the basic is two-fifths each for the Sloss-Sheffield and Woodward and one-fifth for the Alabama Co. A lot of off iron results in the manufacture of basic, which grades around No. 4 and is sold on that basis. There is a brisk market for this iron, but the financial returns are not great. Basic operations altogether are not to be compared with foundry under present conditions. The recent allocations have been largely for 1919 delivery, the period including October to June. Total allocations in the past two months of foundry and basic will approximate 250,000 tons, which is nearly 50,000 tons over the average month's make. Costs of manufacture have now risen, according to the well posted to an average of around $25 per ton. The Republic company is trying out its new washer and will blow in a third furnace in the immediate future. The Alabama Company has one on basic and one on foundry. Consumers of allocated iron appeal for prompt shipment. The situation points to slow delivery of much unallocated iron even in the case of preferred and war essential customers. We quote

per gross ton f. o. b. Birmingham district furnaces, as follows:

No. 2 foundry and soft	$34.00
Basic	33.00

Cast Iron Pipe.—The sanitary pipe trade is praying for peace, because it wants pipe and cannot get it. Meanwhile many of the plants like the Stockham in Birmingham are busy on war essential castings. Water pipe plants operate at about 50 to 60 per cent on Government work.

Coal and Coke.—The Alabama coal output in the past week fell back again to the low mark of 383,000 tons, owing largely to the influenza. Preparations are being made to ship a lot of Alabama coke to Texas interests. Warrior river coal has commenced moving regularly under tentative operations of the federal barge line. The coke supply is still a hand to mouth one.

Old Material.—Scrap dealers report an effort to bear the market and have found difficulty in maintaining prices. The volume of business has not been large and great difficulty is experienced in securing labor. Very little scrap has been moving out of the immediate district. Far-off buyers have given up any attempt to trade in Birmingham on account of freight rates. We quote per gross ton delivered in the Birmingham district (85c. freight rate) as follows:

Old steel axles	$37.00 to $40.00
Old steel rails	28.00 to 30.00
Heavy melting steel	27.00 to 27.50
No. 1 railroad wrought	30.00 to 33.00
No. 1 cast	30.00 to 31.00
Old carwheels	30.00 to 31.00
Tramcar wheels	28.00 to 29.00
Machine shop turnings	17.00 to 18.00
Cast-iron borings	17.00 to 18.00
Stove plate	25.00 to 26.00

Buffalo

BUFFALO, Oct. 21.

Pig Iron.—The demand for Government uses continues to increase in tonnage and the indications are that production will not be equal to such demands, even with 100 per cent of output applied to war work; so that non-essential—or less essential—industries will necessarily suffer curtailment in their supplies of iron. Furnacemen state that the prevalent influenza epidemic is interfering very materially with coal and coke production, which may result in the banking of some furnaces on account of insufficient coke supply. Allocation for Government needs is steadily increasing and the searching inquiry which is being made with respect to stocks of iron held by consumers and the uses to be made of iron in stock, or ordered, is resulting in a healthy and gratifying readjustment for such stocks, and of diversions to be made to relieve urgent Government needs, as replies made to the rigid questionnaires sent out reveal the fact that some industries will not require as much iron as they had bought, or had contemplated buying, and the diligent and persistent search of the Government into actual conditions on such orders is bringing requests from many consumers to readjust or reduce their allotments, which will release considerable tonnages of iron from overestimated requirements to be utilized to good advantage on more urgent needs than originally specified by the consumer. Malleable iron is scarce in this district, and most furnace interests intimate that the outlook for malleable production in the next few months is not encouraging, notwithstanding urgent Government demand, because of the low stocks of low phosphorus ores on hand. We quote prices as follows, f. o. b. furnace, Buffalo:

No. 1 foundry, 2.75 to 3.25 silicon	$37.00
No. 2 X, 2.25 to 2.75 silicon	35.25
No. 3 foundry, 1.75 to 2.25 silicon	34.00
Gray forge	33.00
Malleable, silicon not over 2.25	34.50
Basic	33.00
Bessemer	35.20
Lake Superior charcoal, regular grades, f.o.b. Buffalo	38.50

Finished Iron and Steel.—The distributors of steel products report their stocks are being rapidly depleted, especially on wire products. It is understood that heavy Government allocations of shell rounds, ship building and car materials are restricting shipments for the replenishment of distributors' stocks, with little prospect of relief. It is stated that the new conservation list announced by the War Trades Board will make necessary the securing of special licenses covering practically all steel products shipped into Canada, complete details of which were announced by the War Trades Board as of Oct. 15. The Ferguson Steel & Iron Co., Buffalo, has received the contract for fabricating and erecting 200 tons of steel for boiler and power house for the new aeroplane motor testing plant of the Pierce-Arrow Motor Car Co. now being built on the Niagara River Road north of this city. The same company has the contract for a small tonnage of structural steel for additional mill building for the Norton Co. at Niagara Falls, for the manufacture of abrasives.

Old Material.—The heavier grades of scrap are still very scarce. Heavy melting steel is hard to obtain, and the pronounced shortage of strictly No. 1 heavy melting steel still continues. Malleable and cast scrap also continue to be very scarce, the demand for these two grades far exceeding the supply. Labor conditions remain very bad. Yard dealers experience great difficulty in securing sufficient men to operate their plants and sort and handle even the small amount of material that comes in which requires labor. All grades of scrap command the full Government prices. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$29.00
No. 1 low phosphorus, heavy, 0.04 and under	39.00
Low phosphorus, 0.04 and under	36.50
Low phosphorus, not guaranteed	34.00
No. 1 railroad wrought	34.00
No. 1 railroad and machinery cast	34.00
Iron axles	$44.00 to 46.00
Steel axles	44.00 to 46.00
Carwheels	29.00
Railroad malleable	34.00
Machine shop turnings	18.00 to 18.50
Heavy axle turnings	24.00
Clean cast borings	18.00 to 19.00
Iron rails	36.00 to 37.00
Locomotive grate bars	27.50 to 28.00
Stove plate	28.50 to 29.00
Wrought pipe	27.00 to 28.00
No. 1 busheling scrap	29.00 to 30.00
Bundled sheet stamping scrap	25.00 to 26.00

New York

NEW YORK, Oct. 23.

Ferroalloys.—Demand for ferromanganese continues very light. A few sales for prompt shipment were made by a producer having some early delivery alloy available at the prevailing quotation of $250, delivered, for 70 per cent. It is stated that some ferromanganese has been offered at $245, delivered, for 1919 shipment but no sales at this level are reported. The opinion still prevails in some quarters that the market could be substantially shaded on an attractive offer. The lack of interest is probably due to the uncertainty of prices in 1919 should peace prevail and also to the possibility that many consumers are so well provided for on contract that their supplies may run well into 1919. The spiegeleisen market is also quiet and is developing an easier tone. Sales have been made of moderate quantities at $70, furnace, for the 16 per cent alloy which compares with $75 which has prevailed for some time. There is an inquiry for 300 tons for 1919 delivery and also a sale of about 500 tons. At a meeting in New York last week of 50 per cent ferrosilicon makers, all the domestic producers were present except one. It is understood that an agreement was reached as to prices for 1919 as follows: For delivery during the entire year, $152.50 per ton; for delivery in the first half, $155, and for the first quarter, $157.50. The alloy can be obtained as low as $150 per ton for any delivery in 1919. A large steel maker is inquiring for 2000 tons of Bessemer 10 per cent ferrosilicon for prompt or any reasonably early delivery.

Cast-Iron Pipe.—The market is very quiet with only

an occasional inquiry for a small tonnage. The city of Newburg, N. Y., has not yet succeeded in financing the 2500 tons which it wishes to buy. Employees in some plants are suffering severely from influenza and the already limited output is being further reduced. Government prices are $67.70, New York, for 6-in. and heavier; $70.70 for 4-in.; $77.70 for 3-in., and $1 additional for class A and gas pipe.

Pig Iron.—The leading Virginia seller of foundry iron came into the market a few days ago, offering to sell a limited tonnage for the first half of 1919 delivery to melters engaged in war work. The contracts provide that should the Government discontinue the regulation of prices, then the last price determined by the Government shall be the one at which any undelivered tonnage shall be shipped and paid for, but if the last price made by the Government at the time of discontinuance of the price fixing be less than the cost of manufacture, the seller will not be forced to deliver the remaining tonnage except at a price equal to the cost of manufacture, and the buyer has the option of declining to accept the tonnage, should the price not be acceptable. These terms have not been regarded with favor by some buyers, but others have been willing to place orders and it is understood that the agents of the company have submitted at least 10,000 tons, but how much of this will be accepted is not known. One agent has sold 1800 tons of eastern Pennsylvania foundry grades for delivery in November and December. Most furnaces are now willing to book in a conservative way for next year, but a few are not. It is also true that some buyers are more anxious than others to place contracts. We quote prices as follows for tidewater delivery for Northern and Southern grades up to Jan. 1, 1919.

No. 1 X, silicon, 2.75 to 3.25	$40.90
No. 2 R, silicon, 2.25 to 2.75	39.15
No. 2 plain, silicon, 1.75 to 2.25	37.90
No. 2 X Virginia, silicon, 2.25 to 2.75	42.95
No. 1 Southern (all rail)	43.20
No. 2 Southern (all rail)	41.70

Old Material.—The Central Railroad of New Jersey is offering to contract for the sale of its scrap according to the plan recently proposed by the Pennsylvania Railroad and some contracting has been done, but many buyers are disposed to go slowly in entering into this arrangement. The demand for cast scrap is very strong and in fact there is little difficulty experienced in disposing of any material that can be obtained. The principal trouble the past week has been in obtaining permits, which have been granted with unusual slowness. We quote buying prices of dealers and brokers per gross ton, New York, as follows:

Heavy melting steel	$26.12
Rerolling rails	30.80
Relaying rails	$60.00 to 70.00
Iron and steel car axles	43.40
No. 1 railroad wrought	30.90
No. 1 railroad wrought, cut to not less than 10 in. or over 24 in.	35.90
Wrought-iron track scrap	28.80
Forge fire	25.00 to 26.00
No. 1 yard wrought, long	29.90
Light iron	10.00 to 11.00
Cast borings (clean)	16.85
Machine-shop turnings	16.85
Mixed borings and turnings	16.85
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long	29.90
Stove plate	26.12
Locomotive grate bars	26.12
Malleable cast (railroad)	31.12
Old carwheels	26.12

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

No. 1 machinery cast	$34.00
No. 1 heavy cast (columns, buildings, materials, etc.), cupola size	34.00
No. 1 heavy cast, not cupola size	29.00
No. 1 cast (radiators, cast boilers, etc.)	29.00

Finished Iron and Steel.—The movement of the influenza epidemic westward has curtailed steel mill operations in a widening circle. One of the Buffalo plants, for example, has had to shut down its plate mill and axle plant and is running only on shell steel. The spread of the sickness to industries is interfering seriously, for example, with operations in most of the large fabricating plants and of course with the erecting gangs. Some interest is taken in the likely extension by Washington of the list of preferred industries. While these were established chiefly with respect to fuel and transportation problems, the issuing of a priorities certificate is governed in part by this list. An extension of automatic priorities is also planned according to statements made by representatives of the priorities committee in a meeting last week of the local region of the War Industries Board for the readjustment of industries. Under this jobbers are hopeful that they may replace material by obtaining it through the same rating from the mills; thus on delivery to a customer of material accorded A-6 rating, the effort will be to secure a replenishment on the same rating instead of under a B-4 rating. A tentative distribution of the 40,315 cars for France was made, but all the conditions were not satisfactory to the car builders and final awards, though expected in a few days, are not definite at this writing. As regards freight rates, it is expected that Buffalo shippers will petition to have nothing done with the rates from that point, partly on the ground that whereas they will benefit after Nov. 1 if no change is made for shipments to New England and to New York, they are handicapped as formerly in shipments to such points as Philadelphia. Bids were taken Monday on an addition to the plant of the Western Cartridge Co., East Alton, Ill., involving 700 tons, and on an alteration to a building at the Boston Navy Yard, involving 1800 tons. Other new work which has come up for bids includes storehouses at Washington for the Bureau of Yards and Docks, which will require 500 tons; an inspection shed at 148th Street, New York, for the Public Service Commission, requiring 350 tons, and a building for the Locomotive Superheater Co., East Chicago, Ill., amounting to 300 tons. The American Bridge Co. has been awarded 400 tons for a bridge for the Pennsylvania Railroad at Philadelphia, and the Clinton Bridge & Iron Works has taken 370 tons for the plant of the Holt Mfg. Co., East Peoria, Ill., which is promised in two to three weeks. We quote mill shipments as follows: Steel bars, 3.145c.; shapes, 3.245c.; plates, 3.495c., and bar iron, 3.745c., all New York. Out-of-store prices are 1c. higher.

Cleveland

CLEVELAND, Oct. 22.

Iron Ore.—The demand for boats for the grain trade has so far not been as heavy as was expected and it is estimated that the October movement will be well over 8,000,000 gross tons. Shipments from the mines that were interfered with last week by the forest fires in the vicinity of Duluth are again normal, but the wire service in that region is still badly crippled. Influenza has taken some of the labor from the lower Lake docks, but so far has not interfered with the unloading of ore cargoes and reports indicate that it has not reached the mining districts. We quote, f.o.b. Cleveland, for shipment during the remainder of the year, as follows:

Old range Bessemer, $6.65; old range non-Bessemer, $5.90; Mesaba Bessemer, $6.40; Mesaba non-Bessemer, $5.75.

Pig Iron.—Pig iron allocations during the week broke former records and amounted to 135,800 tons. This was more than double the allocation during the previous two weeks, which totaled 122,000 tons and which showed about the recent average. Each week, a greater proportion of the iron allocated is for next year's delivery. Of that allocated the past week, 91,000 tons was for delivery after January. Among the allocations was about 40,000 tons of different grades that will be furnished a Wisconsin foundry for making semi-steel shells. Allocations during the week were as follows: Low phosphorus iron, 31,500 tons, of which 26,200 tons is for next year's delivery; basic iron, 31,200 tons, of which 25,200 tons is for 1919 delivery; Bessemer iron, 21,700 tons, of which 17,100 tons is for next year's delivery; foundry iron, 45,000 tons, of which 21,600 tons is to be delivered during the first half; malleable iron, 5500 tons, of which 900 tons is for next year; silvery iron, 560 tons. New Government requirements which the pig iron committee has before it now for allocation include several large lots of different grades of iron, among them 7500 tons of silvery iron.

Although a number of the Cleveland foundries have been supplied with iron during the past few days by one of the furnaces of the McKinney Steel Co., which was turned from basic to foundry iron for a week, the production was not sufficient to meet the requirements of all. One Cleveland foundry has purchased 680 tons of high sulphur Southern iron for immediate shipment. Western Pennsylvania furnaces operated by Cleveland interests have suffered because of the influenza epidemic, but have been able to keep their production up. We quote delivered Cleveland, as follows:

Bessemer	$36.60
Basic	33.40
Northern No. 2 foundry	34.40
Southern No. 2 foundry	39.00
Gray forge	33.40
Ohio silvery, 8 per cent silicon	49.90
Standard low phosphorus, Valley furnace	53.00

Bolts, Nuts and Rivets.—The demand for bolts and nuts continues rather heavy and the shortage of raw material has become more acute. One leading manufacturer has notified the jobbing trade that it will accept no additional orders from jobbers until it is able to fill present orders. While no large tonnages are involved in recent rivet orders, there is a heavy demand in the form of small miscellaneous orders.

Coke.—The McKinney Steel Co. blew out one of its Cleveland furnaces for relining last week and the surplus coke is being shipped to a Buffalo furnace interest by direction of the Fuel Administrator. The local coke market is very dull and consumers apparently are getting fuel as fast as they need it.

Old Material.—The lull in the market caused by peace talk was of short duration and apparently affected only sales for future delivery. Conditions are again about normal and the demand is very active, particularly for heavy melting steel in which the shortage continues. Borings and turnings are in good demand and the supply that is coming out is just about sufficient to meet requirements. There is a large demand for heavy grades of low phosphorus melting scrap, particularly for billet and bloom crop ends. Few of these are available, as some of the mills for some time have been using this material in their open-hearth furnaces instead of placing it on the market. The supply of cupola cast scrap is scarcely equal to the demand. Owing to the scarcity of pig iron, the Government is urging many foundries to use more scrap in their mixture. Railroads have been instructed to report their supplies of old car wheels and hold these for disposition by the Government to car wheel manufacturers. Few car wheels have been reaching the trade for some time, although it is claimed that some have got into dealers' hands and have been broken up as cupola cast scrap. Prices are firm on all grades. We quote delivered consumers' yards in Cleveland and vicinity as follows:

Per Gross Ton

Steel rails	$28.00 to $29.00
Steel rails, under 3 ft.	34.00
Steel rails, rerolling	34.00
Iron rails	39.00
Iron car axles	46.50
Steel car axles	46.50
Heavy melting steel	29.00
Cast borings	19.00
Iron and steel turnings and drillings	19.00
Hydraulic compressed sheet scrap	28.00 to 29.00
No. 1 railroad wrought	34.00
Cast-iron carwheels, unbroken	29.00
Cast-iron carwheels, broken	34.00
Agricultural malleable	29.00 to 30.00
Railroad malleable	34.00
Steel axle turnings	24.00
Light bundled sheet scrap	24.50 to 25.00
Cast-iron scrap	29.00
Cast-iron scrap, broken to cupola size	34.00
No. 1 busheling	30.00 to 31.00

Per Net Ton

Railroad grate bars	$25.00 to $25.50
Stove plate	25.00 to 25.50

Finished Iron and Steel.—Orders for some of the 22,500 tons of alloy steel required for the 25,000 trucks to be built by the War Department have been placed and additional lots are now being distributed. An Ohio manufacturer has taken an order for seamless steel tubing for 5000 axles for these trucks and an inquiry is pending for 4000 tons of plates for truck brake drums. Conditions in finished lines have been quieter than usual during the past week. Cleveland rolling mills will not benefit materially from the price advance on refined iron, as their product is mostly common merchant iron and they claim with the increased cost there is little profit in manufacturing bar iron at present. The demand is fairly heavy coming largely from the car companies and bolt and nut makers. The demand for hard steel bars for mining and various other tools for which they can be used is heavy and this is keeping some of the rerolling mills busy, although they are able to make good shipments. The demand for reinforcing bars is light. There is considerable call for small lots of sheets for Government work and some of the mills are taking class A orders for rather early shipment. Jobbers are able to get vey few sheets. Their orders are being kept on the mill books and will not be filled until orders having a higher rating are disposed of. While the influenza is prevalent in Cleveland and other parts of northern Ohio, cases so far have not been sufficiently numerous to interfere seriously with mill operations.

Cleveland jobbers' prices are as follows: Steel bars, 4.07c.; plates, 4.42c.; structural material, 4.17c.; No. 10 blue annealed sheets, 5.42c.; No. 28 black sheets, 6.42c.; No. 28 galvanized sheets, 7.67c.

Cincinnati

CINCINNATI, Oct. 22—(*By Wire*)

Pig Iron.—Several contracts for Southern foundry iron for first half shipment were made last week. A sales of about 1200 tons for that delivery was made to a northern Ohio melter and local and nearby melters have taken in some iron. However, practically all of this iron to be had in the South has been absorbed by consumers who wish to provide for the future as far as possible and did not wish to trust entirely to the allocation program of the War Industries Board. A limited tonnage of Virginia iron was offered here last week for prompt shipment and most of it was sold the same day it came to light. As far as is known, no iron from that district is now on the market. Influenza has reduced production both in the South and in the Hanging Rock district, although reports from Ironton are that the shortage of labor there on this account is not as serious as has been reported by the daily press. The situation is doubtless worse in the Birmingham district. Peace rumors have had little effect on the market in any way. A number of foundrymen, both from the city and outside points, met here to-day with a committee from the Ordnance Department to get information for handling contracts for semi-steel shells, a large number of which is wanted by the Government. These foundrymen were assured that in case contracts were awarded them, no uneasiness should be felt as to getting a supply of iron. The only delays in shipment reported are caused by insufficient labor for loading cars, as they are being handled promptly by the railroads.

Based on freight rates of $3.60 from Birmingham and $1.80 from Ironton, we quote, f.o.b. Cincinnati:

Southern coke, No. 2 foundry and No. 2 soft	$37.60
Southern Ohio, No. 2	35.80
Basic, Northern	34.80

Finished Material.—Orders have fallen off from nearly all sources. Industry has been slowed down to a considerable extent on account of Spanish influenza. For this reason orders for all kinds of finished material are much scarcer. Mill shipments are also being held up, so that jobbers are not accumulating any stocks on account of the slack demand. According to information received recently the warehouses are now able to charge for freight on the weight of wire nail kegs. This tare charge is roughly figured at 2c. a keg, and to-day's quotation on wire nails is $4.25 per keg base. A great deal of confusion has resulted in a misunderstanding of the latest ruling on the price of iron bars. According to one jobbing house, refined iron bars quoted at 5c. base Pittsburgh may include bars of certain sizes from mills using a large quantity of scrap. At any rate, recent rulings have been somewhat puzzling to the trade, and it is hoped that they will be cleared up promptly. An occasional cancellation of material oc-

curs that had been ordered some time ago and which the mills were not able to ship. But these cases are rare and the action on the part of the buyer is said to be due to the timidity as to the future of some concerns which are willing to take advantage of the present situation to play safe. Galvanized sheets are very difficult to obtain and warehouse stocks are practically exhausted.

The following are local jobbers' prices: Steel bars and small structural shapes, 4.13c. base; large rounds and squares 2 in. and over, 4.23c. base; plates, 4.48c. base; No. 10 blue annealed sheets, 5.48c.; steel bands, 3/16 in. and lighter, 4.98c. base (using the new band list). Reinforcing concrete bars, 4.25½c., and wire nails, $4.25 per keg base.

Coke.—A reduction in production has resulted on account of the influenza epidemic. Reports from different sources show that this condition is not confined to any particular field. However, the situation is improving at all points and it is expected that shipments will be resumed at a normal rate before the week has passed. The supply of cars in all districts is very satisfactory. Very little buying of any kind is being done, but occasionally a transaction involving some prompt foundry coke from either the Connellsville or the Wise County field comes to light. Furnace coke is being supplied fast enough to meet all requirements, and stocks are being gradually accumulated by a number of iron producers.

Old Material.—Peace talk has had a depressing effect on the market, as far as future contracting is concerned. However, some business is being transacted on metal for shipment this year. The demand for scrap from the rolling mills has dropped to the lowest point this year, and the limited business transactions now are with foundry melters. Locomotive tires may as well not be quoted, because the railroads are now using this class of scrap and are not selling it as heretofore. Machinists' hammers are made from this scrap and other tools that were heretofore purchased from manufacturers. Steel turnings are not in any demand. The following are buying market prices, f.o.b. cars Cincinnati and southern Ohio, in carload lots:

Per Gross Ton	
Bundled sheet scrap	$21.50 to $22.50
Old iron rails	33.50 to 34.00
Relaying rails, 50 lb. and up	44.50 to 45.00
Rerolling steel rails	31.00 to 32.00
Heavy melting steel scrap	27.50 to 28.00
Steel rails for melting	27.50 to 28.00
Old carwheels	27.50 to 28.00
Per Net Ton	
No. 1 railroad wrought	$29.00 to $29.50
Cast borings	13.00 to 13.50
Steel turnings	13.50 to 14.00
Railroad cast	25.00 to 25.50
No. 1 machinery	28.00 to 28.50
Burnt scrap	19.50 to 20.00
Iron axles	40.00 to 40.50
Locomotive tires (smooth inside)	35.50 to 36.00
Pipes and flues	21.00 to 21.50
Malleable cast	24.50 to 25.00
Railroad tank and sheet	20.00 to 20.50

Chrome Ore Supply Sufficient

WASHINGTON, Oct. 22.—The chrome ore supply in the United States is sufficient to meet all demands, declares an announcement of the War Industries Board. Additional investments for production are not necessary for the present. "Owing largely to the fact," said Hugh W. Sanford, chief of the Ferro Alloys Section of the Chemicals Division of the board, "that consumption of chrome ore in the United States has been reduced by changes brought about by the war program, and furthermore on account of the large domestic production of ore that has taken place in the United States during the past year, in the opinion of the War Industries Board the situation is well in hand and there is no necessity for the present of additional investments being made in the United States for the production of chrome ore."

The Alabama Co., Gadsden, Ala., has completed repairs to its furnace of Ironaton, and will soon blow in. Following operation, the other furnace at this point will be shut down for repairs.

IRON AND INDUSTRIAL STOCKS

Market Activity Greater, Due to Sustained Allied Military Success

NEW YORK, Oct. 21.

Continued Allied success on the battlefield resulted during the closing days of last week in million-share days on the stock exchange. Even the concentration of the public and of financial interests on making a success of the fourth Liberty loan did not act to diminish stock transactions. United States Steel, com., reached 114⅝ but closed at 110⅝ for a net advance of 3¼ points.; pref. gained 1 point. Other steel company shares showed slight net increases in most issues.

The range of prices in active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chal. com..	27 - 29¾	Gulf States Steel.	70½ - 73
Allis-Chal. pf. ..	80½ - 83	Lackaw. Steel ..	73 - 76½
Am. Can com...	44 - 47	Lake Supr. Corp.	17 - 17¾
Am. Can pf.....	92½ - 94½	Lima Loco.	37
Am. Car & Fdry. com.	85¼ - 87¾	Midvale Steel ..	45⅝ - 48
Am. Car & Fdry. pf.	110¾	Nat. Acme	31
Am. Loco. com..	65⅞ - 69	Nat. Enam. & Stm. com.	45½ - 46¼
Am. Loco. pf....100	-101½	N. Y. Air Brake.	115 -116
Am. Radiator com.....240		Nova Scotia Steel.....	61
Am. Ship com.....122		Pressed Stl. com.	68½ - 69⅝
Am. Steel Fdries.	83½ - 87¾	Pressed Steel pf.....	97
Bald. Loco. com.	74 - 85¼	Ry. Steel Spring com.	67 - 69
Bald. Loco. pf...103	-104	Ry Steel Spring pf.	102⅛
Beth. Steel com.	67 - 71¾	Republic com. ..	84⅛ - 87
Beth. Stl. Cl. B.	68 - 72¾	Republic pf.	100¼
Beth. Steel pf.....	90	Sloss com.	53½ - 55
Cambria Steel ..125	-126	Superior Steel ..	38½ - 40
Cent. Fdry. com.	24⅞ - 25	Transue-Williams	37¼ - 39½
Central Fdry. pf.....	35	Un. Alloy Steel..	37 - 39
Chic. Pneu. Tool.	65 - 65½	U. S. Pipe com..	14½ - 15½
Colo. Fuel	42½ - 45⅝	U. S. Pipe pf...	44⅝ - 45
Cruc. Steel com..	53 - 58¼	U. S. Steel com.	107⅝ -112⅝
Crucible Steel pf.....	89	U. S. Steel pf...	110⅜ -112
Gen. Electric ...155	-158¼	Westingh. Elec..	43⅞ - 45½
Gt. No. Ore Cert.	31⅝ - 34⅜		

Dividends

The Crocker-Wheeler Co., quarterly, 2 per cent on the common and 1¾ per cent on the preferred, payable Oct. 15.

The Dominion Steel Co., Ltd., quarterly, 1½ per cent on the preferred, payable Nov. 1.

The National Enameling & Stamping Co., quarterly, 1½ per cent on the common, payable Nov. 29.

The Taylor-Wharton Iron & Steel Co., quarterly, 1¾ per cent on the preferred, payable Nov. 1.

Republic Earnings

For the three months ended Sept. 30, 1918, Republic Iron & Steel Co. reports surplus after charges and Federal taxes of $2,107,318, equivalent to $6.14 a share on the common stock, after deduction of preferred dividends. This compares with surplus of $3,005,772 and $9.44 a share on the common in the preceding quarter. Earnings for the three months ended Sept. 30, 1918, follow:

Net earnings from operations, after deducting charges for maintenance and repairs of plants, amounting to $1,382,806.30 and provision for excess profits taxes, etc.		$2,829,555.44
Add:		
Interest and income from investments.		82,645.02
		$2,912,200.46
Less:		
Provision for depreciation and renewal of plants	$535,271.37	
Provision for exhaustion of minerals	90,668.66	625,940.03
Net profits for the quarter.		$2,286,260.43
Deduct:		
Interest on bonds.		178,942.71
Net profits applicable to dividends.		$2,107,317.72
Provision for dividends during the quarter:		
Preferred stock, 1¾ per cent.	$437,500.00	
Common stock, 1½ per cent.	407,865.00	845,365.00
Surplus for the quarter.		$1,261,952.72

Unfilled Orders on Hand Finished and Semi-finished

Sept. 30, 1918.	315,164 tons
June 30, 1918.	299,737 tons

Due to the employment of non-union men, a strike was declared at the plant of the Ford Motor Co., Kearny, N. J., by employees of construction companies engaged in the erection of the different buildings, on Oct. 16, affecting about 500 men. A settlement was arranged and the men returned to work on Oct. 18.

STILL CURBING STEEL USES

War Industries Board Makes New Orders—Labor Situation Demands Drastic Action

WASHINGTON, Oct. 22.—Saving steel and labor are the great problems which the retrenchment orders of the Priorities Division of the War Industries Board are trying to solve, according to the announcements issued by Judge Edwin B. Parker, Priorities Commissioner.

"For the winning of the war," wrote Judge Parker, in an order to the ball and roller bearing industry, "steel is now the world's most precious metal. The present and constantly increasing steel requirements of this country and its Allies for direct and indirect war needs, 100 per cent of which must under any and all circumstances be promptly supplied, are so enormous as well nigh completely to absorb our constantly expanding producing capacity. The result is obvious. There will be comparatively little iron and steel left to distribute to those industries engaged in non-war work and to consumers for non-war uses. Every possible use of iron and steel or their products which can be deferred must be deferred until after the war. This duty is personal and cannot be avoided or delegated to your friends and neighbors. No consumption is so small as to be immaterial and no saving is insignificant."

Labor Situation Serious

"The labor situation," he wrote in another order, "is the most serious problem that now confronts our nation. Within the next few months, our military forces will be enlarged by at least 2,000,000 men and the majority of these recruits must come from our industries. To prevent a substantial slowing up, if not a complete collapse, of the industrial war program it will be necessary that all labor not now so engaged be shifted as rapidly as possible from industries or activities which are not of exceptional war or industrial importance. The machinery which has been devised for the shifting process is the United States Employment Service. As employers of labor, each member of your industry is urged to co-operate with and assist in every way that service in its great task. Let your co-operation and support extend not merely to an observance of the rules of the Employment Service. Do not hesitate to encourage any of your employees who are not absolutely needed by you, or who leave you for any reason other than to enter military service, to enroll themselves with the Employment Service and accept the employment which it will offer, assuring them that such employment will enable them to render a maximum of service to the nation. In any event, furnish the names of such employees to the service. There are certain kinds of work which women can do, and they are not only willing but anxious to serve. It is nothing less than the personal patriotic duty of each employer who can possibly substitute women workers for men to do so and thus release men for work in those war industries which need men and cannot use women. Lend not merely your own material and moral support to the whole labor program, but use all of your influence toward clarifying and molding public opinion as to the gravity of the labor problem, the need of solving it, and the importance to that end of supporting and assisting the United States Employment Service. The war will be won, but only by concerted and controlled action."

Priorities and Curtailments

The adding and calculating machine, autographic and credit register, time recorder and tabulating machine industry has been accorded priority by the Priorities Division of the War Industries Board. It is recognized, says the board, that the disturbed conditions in accounting departments and organizations are substantial and that the shortage in experienced clerical help are real, and that such machines and devices are almost indispensable in both war and non-war industries. Pledge must be given by the industry to conserve materials, urge repair instead of purchases of new machines; and give preference in filling orders to the United States Government and its Allies, to those engaged in essential industries and for export under War Trade Board license.

The Priorities Division has also announced the following schedule of new industry curtailments:

Electric Fans—On the twelve months' basis curtailed to 40 per cent of 1917 production.

Safes and Vaults—1. Heavy safes and vaults—six months from Oct. 1, 1918, curtailed 100 per cent.

2. Smaller safes, and

3. Office cabinets and the like. For six months commencing Oct. 1, 1918, curtailed to 50 per cent of 6/12 of 1917 production.

Lawn Mowers—From Oct. 1, 1918, for three months curtailed to 40 per cent of 3/12 of 1917 production and that the industry be notified to get on war work before the expiration of said three months.

Padlock Industry—For six months from Oct. 1, 1918, curtailed to 70 per cent of 1917 production.

Builders' Hardware—For six months from Oct. 1, 1918, curtailed tonnage used in production to 40 per cent of 50 per cent of tonnage used in 1917 production.

Scales and Balances—Six months from Oct. 1, 1918, curtailed as follows:

1. Heavy track scales and heavy automatic dial scales curtailed to 50 per cent of 6/12 of 1917 production.

2. Store and counter and spring scales and balances curtailed to 40 per cent of 6/12 of 1917 production.

3. Automatic dumping and recording scales curtailed to 50 per cent of 6/12 of 1917 production.

4. Scientific scales not to be curtailed.

Sporting Arms and Ammunition—Subject to revision, curtailed on the 12 months' basis to 10 per cent of 1917 production.

Cash Registers—(a) Because of the large amount of Government work now being done by the National Cash Register Co., its production of cash registers for six months from Oct. 1, 1918, be curtained to 25 per cent of 6/12 of 1917 production.

(b) All other cash register concerns for six months from Oct. 1, 1918, curtailed to 50 per cent of 1917 production.

Talking Machine Needles—For six months from Oct. 1, 1918, curtailed to 50 per cent of 1917 production in tonnage.

The following modifications have been ordered in previous rulings:

Road Making Machinery—To permit those things to be done as heretofore specified and also to permit the manufacture of 15 per cent of 6/12 of 1917 production for civilian uses, but in no event should the total production for six months from Oct. 1, 1918, exceed 50 per cent of 6/12 of 1917 tonnage.

Cast Iron Boilers and Radiators—Because of conditions in the trade during the year 1917, it was ordered that the basis of production for four months from Sept. 1, 1918, should be 40 per cent of 4/12 of the average production for the years 1915, 1916 and 1917.

At the same time the War Industries Board urges the discontinuance of the manufacture of gasoline stoves because of the heavy war and industrial needs of gasoline. The Priorities Division in granting priority to the oil and gasoline heating and cooking devices and appliances industry requires a pledge of the manufacturers to reduce consumption of iron, steel, brass, copper and aluminum used in the manufacture of their products to a basis of not exceeding 50 per cent of 6/12 of the 1917 consumption.

Rifle Production Over 2,000,000

WASHINGTON, Oct. 22.—The Chief of Ordnance announces that the 2,000,000 mark has been passed in the production of rifles of the United States model 1917. The exact total up to Oct. 12 was 2,033,638. In the week ending Oct. 12, the production totalled 40,814 rifles. The total of rifles produced since the United States entered the war is 2,591,631. This includes 277,944 model 1903, the old Springfield rifle, and 280,049 Russian rifles. It does not include the 600,000 Springfields on hand when war was declared. In issuing the figures, the War Department explained that less than one half the soldiers in an army carry rifles.

Metal Markets

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin,	Lead		Spelter	
Oct.	Lake	Electrolytic	New York	New York	St. Louis	New York	St. Louis
16	26.00	26.00	*78.00	8.05	7.75	9.00	8.65
17	26.00	26.00	*77.00	8.05	7.75	9.00	8.65
18	26.00	26.00	*77.00	8.05	7.75	9.05	8.70
19	26.00	26.00	....	8.05	7.75	9.05	8.70
21	26.00	26.00	*77.00	8.05	7.75	9.15	8.80
22	26.00	26.00	*77.00	8.05	7.75	9.20	8.85

*Nominal.

NEW YORK, Oct. 23.

Markets that are not regulated are inactive but firm and there is very little of interest in the others. A reaffirmation of the old price for copper is expected this week. The tin market is stagnant. The lead situation is unchanged and closely controlled. Spelter has risen but is not active. Antimony is quite lifeless.

New York

Copper.—Influenza and the munitions explosion near the refineries in New Jersey undoubtedly have curtailed output of that grade of copper quite decidedly. As far as information is obtainable it appears that the output will be less in October than it was in September, when it was less than in August. Some men have not returned who were frightened by the explosions and the epidemic is keeping away others. The consensus of opinion seems to be that at the meeting in Washington this week Friday the present 26c. price of copper will not be changed after Nov. 1. What the price will be after peace comes or after restrictions are raised is variously regarded. Some look for a decided rise while others think it will be no higher than 20c. when more normal times come again. Imports of copper in August were 32,000 gross tons, the largest of any month this year, bringing the total to 171,000 tons to Sept. 1. Exports of copper in August were only 18,889 tons, or the lowest of any month, the total for the last eight months being 234,668 tons. These two facts argue for a better supply in this country.

Tin.—There have again been a few offerings of tin in transit and spot metal by those importers and others desiring to unload before a price is fixed and some sales have been made at around 77c., New York, which is the nominal quotation for spot delivery. There is, however, little or no demand and the market is stagnant. For the first time applications for import licenses for November shipment have been refused and importers from the other side cannot ship metal. It is believed, however, that some arrangement will be made whereby importers here will be permitted to meet outstanding contracts. It seems settled that outside of some such cases all future importations are to be made through the U. S. Steel Products Co., as announced recently in dispatches from Washington. Officially importers have had no notification of their status, but it appears as though they had been eliminated for the period of the war. A meeting was held last week by representatives of the large New York importers at which the situation was discussed and another was held Tuesday. The outcome is not yet made public. No price has yet been fixed for tin by the international executive committee, but the whole market is working to a lower basis apparently. That the market is now or soon will be under Government control seems a fact. Official details are expected any day. Arrivals at Atlantic ports this month to Oct. 17 have been 425 tons, with 2325 tons received at Pacific ports to Oct. 17, inclusive. The London market continues to ease, spot Straits having been quoted yesterday at £334 per ton, against £336 10s. a week ago.

Lead.—Strict control continues to characterize this market with all regulation in the hands of the Lead Producers' Committee. The general situation is slightly easier, due largely to the judicious management of this committee. Production is not on the increase, it is stated, but is only about equal to urgent needs. Prices continue unchanged at 7.75c., St. Louis, or 8.05c., New York.

Spelter.—Considerable uncertainty prevails as to just how much of the recent Government inquiries, amounting to 9000 tons of prime Western, has been purchased. Some of it has been put through at prices ranging between 8c. to 8.50c., St. Louis, probably nearer the latter. Outside of Government business there is very little demand and the market while firm is very quiet. It is said that as high as 8.90c., St. Louis, has been paid for October shipment with November offered at 8.60c., St. Louis. The market seems to be largely nominal at 8 85c., St. Louis, or 9.20c., New York, for early delivery, with December at 8.50c., St. Louis, or 8.85c., New York. There has been a slight increase in output of all grades of spelter with a decline of over 3000 tons in stocks for the week ended Oct. 12, according to the regular Government report.

Antimony.—Despite the placing of the Government order the market is lifeless. Wholesale lots are quoted at about 13.50c., duty paid, New York.

Aluminum.—Government prices are in force in this market. For No. 1 virgin metal, 98 to 99 per cent pure, and for scrap the maximum quotation is 33c. per lb. for 50-ton lots, with 33.10c. per lb. fixed for 15 to 50-ton lots and 33.20c., per lb. for 1 to 15 ton lots.

Old Metals.—The market is very quiet. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible	26.00
Copper, heavy and wire	24.50
Copper, light and bottoms	22.50
Brass, heavy	17.25
Brass, light	13.00
Heavy machine composition	25.00
No. 1 yellow rod brass turnings	15.00
No. 1 red brass or composition turnings	23.00
Lead, heavy	8.00
Lead, tea	6.50
Zinc	7.00

Chicago

OCT. 21.—The steady demand for copper is sustained. There is plenty of lead to supply essential needs, although some experience difficulty in obtaining the metal. Tin is uncertain. Spelter has stiffened a little, but the demand continues light. Despite fair activity antimony is somewhat easier. We quote copper at 26c. for carloads and 27.30c. for part carloads; tin, 80c. to 85c.; lead, nominal at 7.85c. in carloads; 8.35c. per lb. for 1 to 25 tons and 8.60c. per lb. for less than 1 ton; spelter, 8.80c. to 9c.; antimony, 15.50c. to 16c. On old metals we quote copper wire, crucible shapes, 21.50c.; copper clips, 21c.; copper bottoms, 21c.; red brass, 21c.; yellow brass, 15c.; lead pipe, 6.50c.; zinc, 5c.; pewter, No. 1, 40c.; tinfoil, 50c.; and block tin, 60c.

St. Louis

OCT. 21.—The nonferrous metals markets have been quiet, with spelter somewhat weaker, selling down to 8.50c. in car lots. Lead continues at 7.75c. In less than car lots lead is quoted at 8.25c. for lots in excess of 2000 lb. and 8.50c. for 1000 lb. or less. Tin is unobtainable except some small quantities of American tin, while no imported tin is being traded in. Tin is quotable at 86c. in small lots; copper, 27.50c.; antimony, 17c. In the Joplin district the weakness in spelter continued to have its effect on the second grade ores, which sold down to $50 and in some cases as low as $47.50, it is reported, for 60 per cent metal. The usual quantity of top grade ore sold at $75 per ton to sheet makers. Calamine was quiet at $32 to $38 per ton, basis of 40 per cent metal, and lead was firm at $100 per ton, 80 per cent metal. The weekly averages were: Zinc blende, $52.50; calamine, $35; lead, $100. We quote dealers' buying prices on miscellaneous scrap metals as follows: Light brass, 10c.; heavy yellow brass, 15c.; heavy red brass and light copper, 21c.; heavy copper and copper wire, 22c.; pewter, 50c.; tinfoil, 65c.; lead, 6c.; zinc, 6c.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

An advance in freight rates of 25 per cent from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, went into effect June 25, 1918. The rates from Pittsburgh, in carloads, to points named, per 100 lb. are as follows: New York, 24.5c.; Philadelphia, 23c.; Boston, 27c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, $1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is $1.315, minimum carload 40,000 lb.; and $1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, structural sizes, 3c.

Wire Products

Wire nails, $3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of $2, and shorter than 1 in., $2.50. Bright basic wire, $3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3.25; galvanized wire, $3.95; galvanized barb wire and fence staples, $4.35; painted barbed wire, $3.65; polished fence staples, $3.65; cement-coated nails, $3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$4.40 base
Large boiler rivets.....$4.50
7/16 in. x 6 in. smaller and shorter rivets..50-10 per cent off list
Machine bolts h.p. nuts, ⅜ in. x 4 in.:
Smaller and shorter, rolled threads....50-10-5 per cent off list
Cut threads.....50-5 per cent off list
Larger and longer sizes.....40-10 per cent off list
Machine bolts, c.p.c. and t. nuts, ⅜ in. x 4 in.:
Smaller and shorter.....40-10 per cent off list
Larger and longer.....35-5 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads.....50-5 per cent off list
Cut threads.....40-10-5 per cent off list
Larger and longer sizes.....40 per cent off list
Lag bolts.....50-10 per cent off list
Plow bolts, Nos. 1, 2, 3.....50 per cent off list
Hot pressed nuts, sq., blank.....2.50c. per lb. off list
Hot pressed nuts, hex., blank.....2.30c. per lb. off list
Hot pressed nuts, sq., tapped.....2.30c. per lb. off list
Hot pressed nuts, hex., tapped.....2.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank.....2.25c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped.....2.00c. per lb. off list
Semi-finished hex. nuts:
⅜ in. and larger.....60-10-10 per cent off list
9/16 in. and smaller.....70-5 per cent off list
Stove bolts.....70-10 per cent off list
Stove bolts.....2½ per cent extra for bulk
Tire bolts.....50-10-5 per cent off list

The above discounts are from present lists now in effect. All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $57; chain rods, $65; screw, rivet and bolt rods and other rods of that character, $65. Prices on high carbon rods are irregular. They range from $70 to $80, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16 in. x 4½ in. and heavier, per 100 lb., $3.90, in lots of 200 kegs of 200 lb. each, or more; track bolts $4.90. Boat spikes, $5.25 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Effective May 21 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., $15 per package; 8-lb. coating, I. C., $15.30. 12-lb. coating, I. C., $17.00; 15-lb. coating, I. C., $18.60; 20-lb. coating, I. C., $19.60; 25-lb. coating, I. C., $20.60; 30-lb. coating, I. C., $21.75; 35-lb. coating, I. C., $22.75; 40-lb. coating, I. C., $24.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. from mill. Refined iron bars, 5.00c.; common iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛, ¼ and ⅜	44	17½	⅛ and ¼	23	+4
½	48	33½	⅜	24	+3
⅝ to 3	51	37½	½	28	10
			¾ to 1½	33	17

Lap Weld

2	44	31½	1¼	18	3
2½ to 6	47	34½	1½	25	11
7 to 12	44	30½	2	26	12
13 and 14	34½	..	2½ to 6	28	15
15	32	..	7 to 12	25	12

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	40	22½	⅛, ¼ and ⅜	22	5
½	45	32½	½	27	14
¾ to 1½	49	36½	¾ to 1½	33	18
2 to 3	50	37½			

Lap Weld, extra strong, plain ends

2	42	30½	1¼	19	4
2½ to 4	45	33½	1½	25	11
4½ to 6	44	32½	2	27	14
7 to 8	40	26½	2½ to 4	29	17
9 to 12	35	21½	4½ to 6	28	16
			7 to 8	20	8
			9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

Lap Welded Steel		*Charcoal Iron*	
3½ to 4½ in.	34	3½ to 4½ in.	12½
2½ to 3¼ in.	24	3 to 3¼ in.	+ 5
2¼ in.	17½	2½ to 2¾ in.	+ 7½
1¾ to 2 in.	13	2 to 2¼ in.	+22½
		1¾ to 1⅞ in.	+35

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton		Per Net Ton	
1 in.	$340	1¾ in.	$220
1¼ in.	280	2 to 2½ in.	190
1⅜ in.	270	2¾ to 3¾ in.	180
1½ in.	220	4 in.	200
		4½ to 5 in.	220

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots, are as follows:

Blue Annealed—Bessemer	Cents per lb.
No. 8 and heavier	4.20
Nos. 9 and 10	4.25
Nos. 11 and 12	4.30
Nos. 13 and 14	4.35
Nos. 15 and 16	4.45
Box Annealed, One Pass Cold Rolled—Bessemer	
Nos. 17 to 21	4.80
Nos. 22 and 24	4.85
Nos. 25 and 26	4.90
No. 27	4.95
No. 28	5.00
No. 29	5.10
No. 30	5.20
Galvanized Black Sheet Gage—Bessemer	
Nos. 10 and 11	5.25
Nos. 12 and 14	5.35
Nos. 15 and 16	5.50
Nos. 17 to 21	5.65
Nos. 22 and 24	5.80
Nos. 25 and 26	5.95
No. 27	6.10
No. 28	6.25
No. 29	6.50
No. 30	6.75
Tin-Mill Black Plate—Bessemer	
Nos. 15 and 16	4.80
Nos. 17 to 21	4.85
Nos. 22 to 24	4.90
Nos. 25 and 27	4.95
No. 28	5.00
No. 29	5.05
No. 30	5.05
Nos. 30½ and 31	5.10

OBITUARY

HERBERT F. BLACK, assistant to the president and a director of the Midvale Steel & Ordnance Co., died Oct. 17 at his home in Pittsburgh. Mr. Black was taken ill Friday, Oct. 11, and pneumonia developed the following Tuesday. He was 39 years old, and had risen from the position of messenger in the office of D. G. Kerr, vice-president of the United States Steel Corporation. One day when he was 17 years old he was taken into the office of the Carnegie Steel Co. by one of the Carnegie men who had picked him out as a promising youth. Mr. Kerr afterward saw him and made him his messenger. Advancement came quite rapidly, and Mr. Black later took a night course in metallurgy at the University of Pittsburgh. Five years ago William H. Donner, now president of the Donner Steel Co., then president of the Cambria Steel Co., employed Mr. Black as manager of the raw materials department of that company. When he was with the Cambria Steel Co. he saw opportunities to buy ore properties and steamboats cheaply, and a number of acquisitions were made by the Cambria company on his advice. When the Midvale Steel & Ordnance Co. absorbed the Cambria Steel Co., Mr. Black was retained as assistant to President Alva C. Dinkey. He continued in charge of the raw materials department. Shortly afterward he was made a director of the company. Mr. Black was a member of practically all of the leading clubs in Pittsburgh; also a member of the Bankers' Club of New York. He leaves a widow and three small children.

HERBERT BLACK

JOHN P. HOPKINS, chairman, board of directors, Independent Pneumatic Tool Co., and former mayor of Chicago, died in that city on Sunday, Oct. 13. He was ill only a few days, and death was attributed to a weak heart, superinduced by an attack of Spanish influenza. Mr. Hopkins was born in Buffalo, N. Y., in 1858. He moved to Chicago in 1880, and accepted a position with the Pullman Palace Car Co. as a machinist. Later he went into business for himself as a partner in the firm of Secord & Hopkins, general merchandise, at Pullman, Ill. This venture proved successful, and was the foundation for the large fortune built up by the decedent. He was a national figure in politics. He served the unexpired term of Carter H. Harrison, Sr., as mayor of Chicago in 1893-94, and was several times chairman of the Democratic National Committee. Since the beginning of the war he had served as secretary of the Illinois Council of Defense. His close attention to war work and bountiful energy in helping the nation undoubtedly affected his health and hastened the end. In 1905 he became interested in the Independent Pneumatic Tool Co., and was the largest stockholder. He was one of the organizers of this company. Mr. Hopkins was a bachelor.

LIEUT. PHILIP J. DAVIDSON, treasurer, Union Drawn Steel Co., Beaver Falls, Pa., and identified with several other companies, was killed in action in France recently. He was born May 26, 1891, and was a graduate of the University of Pennsylvania. He entered the mills of the Union Drawn Steel Co. shortly after leaving college and spent about a year in the various manufacturing departments, then going into the office, where he later was made treasurer. On Sept. 9, 1917, Lieut. Davidson entered the officers' training school at Fort Oglethorpe, Ga., and received a commission as first lieutenant of infantry. He sailed for France May 15, 1918, and went into immediate action, having been killed while rushing a machine gun nest. He served just four days and four nights at the front. Mr. Davidson was, in addition to his connection with the Union Drawn Steel Co., secretary and treasurer of the Ideal Tool & Mfg. Co., Beaver Falls, Pa.; director of the Union Drawn Steel Co., Ltd., Hamilton, Ont.; Davidson Ore Mining Co., Buffalo, N. Y., and Union Coal & Clay Co., New Galilee, Pa.; Knott & Harker Co. and the Farmers' National Bank Building, Beaver Falls, and the Beaver Trust Co., Beaver, Pa. He was also partner in the Frank M. Hoover Co., Pittsburgh.

SHERMAN C. SCHAUER, whose death on Oct. 11 was noted in this column last week, was held in high esteem by the employees of the Cincinnati Bickford Tool Co. as a meeting held on Oct. 4 by the employees shows. In a resolution which was then drawn up they referred to his eight years as vice-president and general manager of the company, "his deep interest in all matters appertaining to the welfare" of the employees and "his ability as an executive" and "character as a man and friend." Among the improvements made in the upright drilling machine by Mr. Schauer is a friction back gear, a positive geared feed box, a geared tapping attachment and a worm wheel elevating mechanism. The company's high-speed, shaft-driven, upright machine received awards at the Pan-American and West Indian Expositions, the Exposition Universalle, Liege, 1905, and the Exposizione Internationale di Milano, 1906.

HENRY J. KLAER, vice-president Penn Seaboard Steel Corporation, died at the home of his father-in-law, Senator William C. Sproul, Lapidea Manor, near Chester, Pa., Oct. 15, from pneumonia, following influenza. Mr. Klaer was born at Milford, Pa., and was in his thirtieth year. He went to Chester soon after his graduation from the University of Pennsylvania and entered the service of the American Steel Foundries in an engineering capacity. In 1916 he took charge of the Robert Wetherill & Co. plant for Senator Sproul, who shortly thereafter sold the company to the Sun Shipbuilding Co. Soon after Mr. Klaer became connected with the Penn Seaboard Steel Corporation as general manager and this year was promoted to the vice-presidency. He was captain and commander of the Chester unit of the Pennsylvania Reserve Militia.

NOEL B. WITTMAN, one of the best known coal and coke agents in Philadelphia, died Oct. 17 from pneumonia following an attack of influenza. He was 61 years of age. A number of years ago Mr. Wittman was blast furnace manager for E. & G. Brooke, Birdsboro, Pa. He later went to Philadelphia, where he was the agent of the Keystone Coal & Coke Co. For a number of years he was a member of the firm of Potts, Platt & Wittman, dealers in coal, coke and scrap. In recent years he conducted the business of N. B. Wittman & Co., dealers in coal, coke and scrap.

MAJOR ARTHUR S. HOUTS, for many years production manager of the bucket department of the Brown Hoisting Machinery Co., Cleveland, was killed in action in France Sept. 28. He was 38 years of age and had served for a number of years in the Ohio National Guard in which he enlisted as a private and served in various capacities, being made a major in 1913. He was a thirty-second degree Mason.

RUFUS B. ALLEN, for 12 years superintendent of the open hearth department of the C. Pardee Works, Perth Amboy, N. J., died at his home, that city, Sept. 20, aged 65 years. Before becoming connected with the C. Pardee Works, Mr. Allen was with the Page Woven Wire Fence Co. at Monessen, Pa.; the Illinois Steel Co., South Chicago, Ill., and Latrobe Steel Co., Latrobe, Pa.

CHARLES F. FORSTER, president Forster-Waterbury Malleable Iron Works, Franklin Park, Ill., died at Oak Park, Ill., Oct. 15. He is survived by his widow, a

daughter and a son, Thomas H. Forster. He was for many years with the Carnegie Steel Co. at the Homestead steel works and later was connected with the Iroquois Iron Co. at South Chicago.

JOHN J. SMART, second vice-president Rowson, Drew & Clydesdale, Inc., engineer, founder and machinist, New York, died suddenly a few days ago. Mr. Smart was one of the founders of the W. J. Crouch Co., Inc., and since its amalgamation with Rowson, Drew & Clydesdale, Inc., was manager of the manufacturing division.

WARREN L. BIGNALL, treasurer J. D. Warren Mfg. Co., Chicago, died at his home in that city, Oct. 13, in his thirtieth year. Mr. Bignall was called to serve his country Sept. 19 and within a few days contracted influenza, which soon developed into pneumonia. He was born at Elba, N. Y.

FRANK M. DENZLER, sales manager, Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, died Oct. 17 from influenza. He was born in Cleveland in 1888 and was formerly connected with the Canton Sheet Steel Co., Canton, Ohio, and the American Rolling Mill Co., Middletown, Ohio.

ROBERT M. DIXON, president Safety Car Heating & Lighting Co., died suddenly Oct. 16, at East Orange, N. J., from heart failure. He was a member of the American Society of Mechanical Engineers and a trustee of the United Engineering Society.

ROBERT FOGLEMAN, formerly district manager of the Madison, Ill., plant of the American Car & Foundry Co., and later district manager of the Terre Haute, Ind., plant of the same company, died at Madison, Ind., last week.

THOMAS JOHN DAVEY, the oldest of the eight Davey brothers, connected with the Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, died last week from pneumonia following influenza. He was 47 years of age.

WALLACE B. LINDSAY, head of the electrical engineering department of the Ingersoll-Rand Co., New York, with works at Phillipsburg, N. J., died at his home, 600 West 136th Street, New York, Oct. 12, of pneumonia.

WILLIAM B. DAYTON, Brooklyn, founder of the firm of W. B. Dayton & Son, of that city, manufacturers of furnaces, tinware, etc., died at his home, 291 Schermerhorn Street, Oct. 17, aged 89 years.

HUGH VERNON RAMSEY, general superintendent of the New Jersey and Pennsylvania shipyards of Pusey & Jones, Gloucester City, N. J., died Oct. 10, at his home in that city of an attack of influenza, followed by pneumonia, aged 43 years.

W. E. HERRING, agent for four years in the Philadelphia district of the Platt Iron Works Co., Dayton, Ohio, died Oct. 9.

SAMUEL M. HAYES, assistant treasurer Hydraulic Pressed Steel Co., Cleveland, died Oct. 26 after an operation.

W. D. MEYERS, secretary Robbins Electrical Co., Pittsburgh, died Oct. 19 of pneumonia, aged 37 years.

Test for Workmen

WASHINGTON, Oct. 23.—All applicants for work at the plant of the Submarine Boat Corporation of Newark, N. J., must submit to a test of their abilities in the Training School of the company. This training school was established under the direction of the United States Shipping Board Emergency Fleet Corporation.

An applicant for a job at this shipyard claiming to be a first class workman must prove his claim under the direction of the Educational and Training Section of the board before he is allowed to go to work on the ways. If the applicant fails in the examination he must take the regular course of instruction at the school. When he becomes efficient, he is given work on the ways. This same system applies to drillers, reamers, carpenters and to every other class of workers engaged in shipbuilding.

Price Changes and Other Documents

THE IRON AGE has issued two additional reprints showing changes in prices as announced by the American Iron and Steel Institute. The two new documents are:

F—Third Supplement to Price Booklet

F—Price changes announced in THE IRON AGE of Oct. 10. Sent postpaid for 3c.

G—Fourth Supplement to Price Booklet

G—Changes in bar iron and other products announced in THE IRON AGE of Oct. 17. Sent postpaid for 6c.

The documents previously announced by THE IRON AGE are as follows:

A—New Price Booklet

American Iron and Steel Institute's booklet of August, 1918, giving maximum prices on iron and steel products. Sent postpaid on the following terms: One copy, 50 cents; 12 copies, $5; 100 copies, $35.

B—Supplement for Price Booklet

Reprint of price changes published in THE IRON AGE of Sept. 12. Sent postpaid for 6c. per copy.

C—Priority Rules Pamphlet

Rules governing priority in production, issued by the Priorities Division of the War Industries Board, circular No. 4, with some supplementary matter on priorities, sent postpaid for 6c. per copy.

D—Supplement to Priority Pamphlet

Reprint of articles published in THE IRON AGE of Sept. 12, giving preference list of industries issued by the War Industries Board. Also procedure for exemption of workers. Sent postpaid for 3c. per copy.

E—Second Supplement to Price Booklet

Reprint of price changes published in THE IRON AGE of Sept. 26. Sent postpaid at 6c. per copy.

Pittsburg Steel Co.'s Report

The Pittsburgh Steel Co., Pittsburgh, in its report for the year ended June 30, 1918, shows net sales for the year of $37,930,842.32, as against sales for the previous year of $33,066,083.48, an increase of $4,864,758.84. After setting aside $1,365,134.16 for depreciation of plants and for extinguishment of mines, and $2,730,121.91 for estimated income and war profits taxes, the company had net profits remaining of $4,556,442.82, which, compared with the previous year, when profits were $7,811,444.19, shows a decrease of $3,255,001.37. The decrease in the net profits for the year is accounted for by various increases in wages and higher costs of materials and supplies, and by an increase of $906,573.75 in income and war profits taxes. During the year the company shipped pig iron and billets valued at $15,758,125.89; hoops, bands and cotton ties valued at $2,991,218.54; wire rods, plain wire, nails, fencing, etc., valued at $18,161,344.99; miscellaneous products valued at $1,020,152.90; a total of $37,930,842.32. The company reports that new gas producers started more than a year ago are now practically completed. No new construction of any importance has been undertaken during the past year.

The report also shows that the company has bought $1,300,000 worth of Liberty bonds of the first loan; $1,000,000 worth of the second loan, and $1,200,000 worth of the third loan. The report notes the fact that a tract of coal lands, consisting of 513 acres in Greene county, Pa., was purchased during the year.

PERSONAL

Following the recent retirement of Harry L. Williams as president of Hickman, Williams & Co. and the selection of T. C. Ward as president of the company, Richmond Nicholas has been made a vice-president, his office continuing to be in Chicago. He has been with the firm many years. A. J. Johnston has been made resident manager of the Chicago office. He also has been with the company a number of years and combines with his ability as a chemist that of a salesman. The promotion of both Mr. Nicholas and Mr. Johnston is in line with Mr. Williams' policy of having the younger men of the company take over its executive control.

Thomas A. Arthur, resident manager in Pittsburgh for Hickman, Williams & Co., has been elected vice-president of the company, succeeding T. Coleman Ward, who has been elected to the presidency. Mr. Arthur will continue as resident manager in Pittsburgh, which position he has held since early in 1915. His connection with Hickman, Williams & Co. dates from 1907.

H. L. Williams, Chicago, formerly president of Hickman, Williams & Co., with his old partner, Baylor Hickman of Louisville, Ky., who retired from the iron firm some time ago, will soon sail for France in connection with Red Cross work. Mr. Hickman recently returned from France, where he went on a mission for the United States Government. He gives a glowing account of what the United States has done abroad, saying that what he saw would make anyone proud of being an American. He quotes high French and English officials as emphatic in their praise of the United States troops. He believes the French railroad systems will be revolutionized by what Americans have done.

Seymour Wheeler of Pickands, Brown & Co., Chicago, left Oct. 23 to enter the officers' training school at Camp Zachary Taylor, Louisville, Ky.

J. Ross Pilling, Pilling & Crane, Philadelphia, has joined the colors and gone to the training camp at Jacksonville, Fla.

A. F. Knobloch, vice-president and works manager Cleveland Tractor Co., Cleveland, has gone to Washington to become connected with the Ordnance Department and will have supervision of the manufacture of tanks and tractors. He is widely known in the automobile industry, having been for many years vice-president and general manager of the Northway Motor & Mfg. Co., Detroit, and later having held a similar position with the Cole Motor Co., Indianapolis.

The Chicago Pneumatic Tool Co. announces the election of H. D. Megary to the office of secretary, to succeed W. B. Seelig, who has resigned.

Samuel T. Harleman, Mauch Chunk, Pa., has been appointed chief engineer and production manager of the Atlas Crucible Steel Co., Dunkirk, N. Y.

James Prince, treasurer of the Curtiss Aeroplane & Motor Corporation, Buffalo, has resigned.

Thomas Chalmers has been appointed general manager of the by-product division of the Tennessee Coal, Iron & Railroad Co., effective Oct. 1. He succeeds Henry M. Urban, who has gone with the Woodward Iron Co. as general manager.

George M. Morrow, Jr., president Birmingham Machine & Foundry Co., has been notified to report for command of an artillery regiment as lieutenant-colonel. He is a West Pointer and served in the Army several years, but for the past four years has been engaged in the foundry business. He has been especially successful as a manufacturer of cast iron target shells and lathes for the French Government. He will retain his manufacturing interests.

F. E. Smith, formerly of the engineering department of the Stephens-Adamson Mfg. Co. and of the American Zinc & Chemical Co., has been made chief engineer of the Barber-Greene Co., Aurora, Ill. The latter company also announces the appointment of George C. Sanford as superintendent. He was formerly of the Elevator Supplies Co. and of the Otis Elevator Co.

George Quelch, a staff engineer of the International Oxygen Co., New York, sailed recently for England to supervise the installation of a 480-cell plant of I. O. C. unit oxyhydrogen generators for the British Admiralty.

Phillips Wesley has been appointed manager in charge of the oxy-hydrogen plant and sales office of the International Oxygen Co. at Pittsburgh. The company announces also that J. Heller, long with Heller & Sons, has joined its New York sales force.

Samuel L. Seymour, assistant to the freight traffic manager, Pennsylvania Railroad Co., Pittsburgh, on Oct. 21 served the last day of 50 years of service with that railroad.

Frank Hodson, president Electric Furnace Construction Co., Philadelphia, who has returned from Europe, announces a reorganization of the staff of this company. F. W. Brooke becomes vice-president and H. H. Twose, late of Price Waterhouse & Co., has been appointed secretary-treasurer. G. W. Ketter becomes chief installation superintendent and Neil Neville, who has been on the installation staff, will join Mr. Hodson in the selling and business organization. G. L. Ashmore has been appointed electrical engineer.

Edwin E. Taylor, Peoria, Ill., has become associated with the Turner Mfg. Co., Port Washington, Wis., founder, machinist and manufacturer of farm tractors, as manager of the advertising department. Mr. Taylor resigned as advertising director of the Acme Harvesting Machine Co., Peoria, to accept the position in the Turner organization.

T. H. Symington, head of the T. H. Symington Co., malleable castings, Baltimore, and also of the Symington Machine Corporation, the Symington Forge Corporation, the Symington-Anderson Co. and the Symington Chicago Corporation, has resigned as assistant chief of ordnance, Washington, after about three weeks of service. The companies have large Government contracts for guns and shells. In a statement issued by Mr. Symington he says that he will fit in better as head of his companies which are doing war work than in Washington.

Brigadier General G. W. Burr, who has been the representative of the U. S. Army Ordnance Department in England, has been designated chief of the Engineering Division, which is the division of the Ordnance Department charged with designing all ordnance material. General Burr is now stationed in Washington. He relieves Brigadier General John H. Rice, who has been in France for several months.

Capt. Perry C. Ragan, formerly connected with the Illinois Pressed Steel Co. at Chicago, has been promoted recently to the rank of major at Camp Taylor, Louisville, Ky.

Charles R. Miller, vice-president and general manager Miami Cycle & Mfg. Co., Middletown, Ohio, has resigned to accept a position as assistant production manager for the Willys-Overland Motor Car Co., Toledo, Ohio.

Tomas Alfredo Page, Santiago, Chile, has been appointed consul for Ohio and will make his headquarters in Cincinnati. A temporary office has been established at 718 First National Bank Building. Mr. Page is anxious to get in touch with manufacturers and exporters who desire information as to the possibilities of the Chilean market for American goods.

Victor E. Knecht, a well-known foundryman of Cincinnati, has accepted a position as superintendent and foundry manager of the Van Wert Foundry Co., Van Wert, Ohio.

W. J. McDowell has been appointed manager of the machine tool department of the Fairbanks Co., 64 East Lake Street, Chicago. For some years he has been connected with the motor truck industry.

Prince Axel-Christian-George of Denmark, with the other members of the Danish Naval Mission touring the United States on the invitation of our Government, recently visited the works of the Westinghouse Electric & Mfg. Co., at East Pittsburgh, Pa.

Lloyd H. Atkinson has resigned as vice-president of the Air Reduction Co., Inc., 120 Broadway, New York.

He has been in poor health for some time as the result of overwork, and will take an extended vacation before engaging in one of the war service activities.

The Brier Hill Steel Co., Youngstown, Ohio, announces the appointment of Warren F. Perry as industrial engineer, and Charles B. Cushwa as superintendent of finishing mills, both being newly created positions. Mr. Perry is now manager of transportation for the Carnegie Steel Co., Youngstown district, while Mr. Cushwa recently resigned as manager of the Sharon Steel Hoop Co. Mahoning Valley works. Mr. Cushwa has already entered upon his new duties, and Mr. Perry will enter upon his on Nov. 1. Mr. Cushwa will have general charge of the plate mills and sheet mills, his jurisdiction embracing the Thomas and Empire works at Niles, Ohio, and the Western Reserve works at Warren, Ohio. For 17 years Mr. Cushwa was general manager of the Youngstown Iron & Steel Co., and was retained as manager of the Mahoning Valley works when that company was absorbed by the Sharon Steel Hoop Co. Mr. Perry will have general charge of all industrial relations work, including safety, pensions, claims, plant protection and employment. These departments will be more fully developed. Mr. Perry has been 17 years with the Carnegie Steel Co.

Brig. Gen. Samuel McRoberts has been relieved from duty as Chief of the Procurement Division of the Army Ordnance Department and has been succeeded by Lieut. Col. Robert P. Lamont. General McRoberts is to undertake important work on the staff of the Chief Ordnance Officer with the American Expeditionary Forces in France. Lieut. Col. Lamont in civil life was president of the American Steel Foundries of Chicago. He was commissioned Feb. 4, 1918, and has been at the head of the Raw Materials Section of the Procurement Division. General McRoberts in civil life was executive manager of the National City Bank of New York. He was commissioned Colonel Nov. 28, 1917, and promoted to his present rank Aug. 8, 1918, at which time he was in France surveying ordnance conditions at the front.

C. D. Morton has left his position as sales engineer for the Page Steel & Wire Co., New York, to become a captain in the General Engineer Depot, U. S. A., at Washington.

Charles E. Goodnow, formerly assistant sales manager of the electrical and special wire department of the American Steel & Wire Co., and more recently identified with building construction work in Washington and Brooklyn for the Army and Navy, is now with the Page Steel & Wire Co., 30 Church Street, New York.

John W. Watson has become assistant chief of the Hispano-Suiza Engine Section of the Bureau of Aircraft Production, Washington. Mr. Watson is president of the American Bronze Corporation of Berwyn, Pa., and also chairman of the Pennsylvania Section, Society of Automotive Engineers. The administration of this section includes all engineering, production and inspecting activities for the Government in connection with the production of about $80,000,000 worth of engines.

H. J. Bailey has been elected to the presidency of the Hilles & Jones Co., Wilmington, Del., to fill the vacancy caused by the recent death of Alfred R. Jones. George C. Bailey assumes the office of secretary, formerly held by H. J. Bailey.

H. C. Thomas, who has been with the United Alloy Steel Corporation, Canton, Ohio, since June 1, has been appointed assistant general superintendent. Mr. Thomas was formerly chief chemist and metallurgist with the Alan Wood Iron & Steel Co. Later, as chief chemist of the Illinois Steel Co. Gary works, he built and equipped the chemical and metallographic laboratories. After two years he was made assistant general superintendent, which position he held for eight and one-half years. Mr. Thomas left there to become associated with the United Alloy Steel Corporation. Harry Geltz, for two and one-half years assistant purchasing agent of United Alloy Steel Corporation, has been appointed secretary to E. L. Hang, vice-president and general manager. George S. Kurtz, formerly assistant purchasing agent of the Forged Steel Wheel Co., Butler, Pa., and R. L. Andrews, formerly with the Hardware & Supply Co., Akron, have been appointed assistant purchasing agents. F. B. Mulvaney, formerly production manager of the Canton Drop Forging & Mfg. Co., has been appointed assistant inspection engineer.

Influenza Cuts Down Coal Production

WASHINGTON, Oct. 22.—The effects of influenza are making themselves felt in the statistics of coal production. The bituminous output during the week ending Oct. 12 is estimated at 12,321,000 net tons, a decrease from the week preceding of 273,000 tons, or 2.2 per cent, but an increase over the corresponding week of last year of 1,317,000 net tons, or 12 per cent. Production for the first nine months of 1918 is estimated at 447,905,672 tons, an increase over the first nine months of last year of 36,179,783 tons, or 8.7 per cent. This increase was really brought about during the months of July, August and September, amounting in this period to 24,234,681 tons, or 17.4 per cent.

The production of beehive coke in the United States in the week ended Oct. 12 is estimated at 597,000 tons, an increase over the week preceding of 23,000 tons, or approximately 4 per cent. A slight improvement was reported in labor conditions. The production of by-product coke dropped from 585,281 tons to 577,440 tons. In both weeks this represented 91.9 per cent of the maximum capacity of the plants.

Table of Prices of Foundry Iron

Eliot A. Kebler, Pittsburgh representative of Matthew Addy & Co., pig iron merchants, has prepared a helpful table of prices on standard foundry iron, by the use of which it is easy to arrive at the price for grades of iron containing variations of silicon and manganese. The table follows:

Sulphur Not Over 0.05

Silicon	Mn. 0.00 to 1.00	Mn. 1.00 to 1.50	Mn. 1.50 to 2.00	Mn. 2.00 to 2.50	Mn. 2.50 to 3.00	Mn. 3.00 to 3.50	Mn. 3.50 to 4.00
1.00—1.75..	$33.50	$34.00	$35.00	$36.00	$37.00	$38.00	$39.00
1.75—2.25..	34.00	34.50	35.50	36.50	37.50	38.50	39.50
2.25—2.75..	35.25	35.75	36.75	37.75	38.75	39.75	40.75
2.75—3.25..	37.00	37.50	38.50	39.50	40.50	41.50	42.50
3.25—3.75..	39.00	39.50	40.50	41.50	42.50	43.50	44.50
3.75—4.25..	40.00	40.50	41.50	42.50	43.50	44.50	45.50
4.25—4.75..	41.00	41.50	42.50	43.50	44.50	45.50	46.50
4.75—5.25..	42.00	42.50	43.50	44.50	45.50	46.50	47.50
5.25—5.75..	43.00	43.50	44.50	45.50	46.50	47.50	48.50
5.75—6.00..	43.00	43.50	44.50	45.50	46.50	47.50	48.50

For 4 to 6 per cent manganese add $1 for each 0.50 manganese over 4 per cent.

Influenza at St. Louis

ST. LOUIS, Oct. 19.—Serious inroads into labor in the iron and allied industries, as well as others, have been made at and around St. Louis by the Spanish influenza epidemic. Three hundred to 600 new cases have been reported daily during the last two weeks in St. Louis alone and almost an equal number from the nearby industrial centers.

Health Commissioner Starkloff to-day asked the Board of Aldermen for permission to close industrial plants which fail to comply with the recommendations of the health commissioner's office as to ventilation and other preventive methods.

The War Labor Board has authorized the abolishment of the system of release cards for employees of different plants at Hazleton, Pa., and vicinity, and which have heretofore been necessary for any employee of a plant working on Government orders desiring to work elsewhere.

The Indianapolis meeting of the American Society of Mechanical Engineers, calculated to bring together the mid-western sections of the society and scheduled for Oct. 25 and 26, has been postponed indefinitely on account of the influenza epidemic.

The American Locomotive Co. has received an order for 150 consolidation type locomotives weighing 147,000 lb. for the Italian State Railways.

Machinery Markets and News of the Works

ADDITIONAL WAR FUNDS

Bill Carrying Over $6,000,000,000 Passes the House

Shell and Pistol-Making Equipment Orders Still Pending—Government Appeals for Speed to Overcome Loss Due to Influenza

Several factors have operated the past week to retard activity in any large way in machine-tool buying. Government programs covering pistol-making, semi-steel gas and smoke-screen shells and other items have been put back somewhat awaiting the enactment of the so-called first general deficiency appropriation bill now before Congress. The vast amount of production that hinges on its provisions may be gaged by appropriations of $3,699,256,642 to go to the Ordnance Department of which $286,656,866 is to be in cash; to Chemical Warfare Department, $250,000,000; to the Division of Military Aeronautics, $60,000,000; to the Signal Corps, $95,000,000; to the Engineer Corps, $326,250,000. Authorizations and appropriations for the Navy Department include $11,185,301 for ordnance and ordnance stores, $26,529,464 for new batteries for ships, $9,230,000 for ammunition for vessels.

Quotations are being submitted in large numbers by dealers at Pittsburgh to the Ordnance Department, United States Steel Corporation, for the equipment for the Neville Island gun and projectile plant, for which much is yet to be purchased.

The Central West continues to lead in placing machine-tool orders. The American Multigraph Co., Cleveland, is buying about 300 tools for the former Ford Motor Co. service plant at Cleveland, which it has acquired for the manufacture of time fuses. Approximately 100 automatic screw machines, 75 to 100 drilling machines and 50 hand screw machines are specified, as well as complete toolroom equipment.

Many prominent manufacturing plants could be designated as continually in the market for equipment; but among those notably so of late are the Willys-Overland Co., Elmira, N. Y., which ordered 12 screw machines; the Steel Products Co., Cleveland, 17 screw machines; the American Brake Shoe & Foundry Co., Erie, Pa., 16 turret lathes; Thomas A. Edison, Inc., Orange, N. J., 15 screw machines; the National-Acme Co., Cleveland, 45 screw machines.

The Symington-Chicago Corporation, Chicago; the Holt Mfg. Co., Peoria, Ill.; Mason Davis & Co., Inc., Chicago; the H. H. Franklin Mfg. Co., Syracuse, N. Y., are among those now in the market.

Influenza has reduced the output of shops so seriously that an appeal has been issued by the Ordnance Department in the form of a telegram to plants on war work calling on all workers remaining at their tasks to speed up production to make good the lost labor of those on the sick list.

New York

NEW YORK, Oct. 21.

Greater activity in the local machine-tool market showed in somewhat increased transactions the past week in many lines. Inability to definitely place orders for equipment for the pistol-making, semi-steel shell and other programs, occasioned by the holding of the deficiency bill now before Congress, is delaying, however, the purchase of a considerable amount of machinery. As regards pistol contracts, it is now understood in the trade that the Government will buy the tools required by the Lanston Monotype Machine Co. and the S-S-E Co., both of Philadelphia, and the National Cash Register Co., Dayton, Ohio. The Savage Arms Co. plants are reported to have largely completed their contracts for Lewis guns and to be well equipped toward the manufacture of pistols. It is expected that the Winchester Repeating Arms Co., New Haven, Conn., the Burroughs Adding Machine Co., Detroit, the North American Arms Co., Quebec, and Carem Brothers, Montreal, Que., will do their own buying. Under present regulations Canadian buyers may import from the United States only such tools as are unobtainable in Canada; and for this reason the bulk of their purchasing, particularly of such as boring machines, lathes and band-grooving machines, will be done there.

Shipyard shop equipment is being bought by W. H. Gahagan, Inc., Arverne, Long Island, N. Y., recently awarded new contracts by the Emergency Fleet Corporation for steel tugs. A new plant is being established by the company, which has already ordered 4 vertical punches, 2 horizontal punches, 1 beam bender, 1 large bending roll, and some radial drills. Among other equipment as yet unplaced are the portable shipyard tools.

The Chinese Government, through its American agent, the Robert Dollar Co., 17 Battery Place, New York, has been in the market for about 25 machines for rounding out the shops of the Shanghai Navy Yard, which will construct 4 10,000-ton ships for the Emergency Fleet Corporation. Two vertical shearing machines, 6 vertical punches, 2 horizontal punches, and 2 beam bending machines have been bought.

The H. H. Franklin Mfg. Co., Syracuse, N. Y., is in the market for more equipment for handling its production of crankshafts for airplane engines. It is understood that the manufacture of these parts has been increased of late to provide an adequate stock for replacing worn shafts in engines. Among tools to be purchased for this work is a list of about 25 grinders..

The Worthington Pump & Machinery Corporation, 113 Broadway, New York, is increasing the shop equipment at its Harrison, N. J., plant and has already bought 4 6-ft. radial drills and 3 large floor-type boring mills. The Watervliet Arsenal has also ordered 3 similar boring mills.

The Delaware, Lackawanna & Western Railroad, 90 West Street, New York, is in the market for about a dozen miscellaneous tools for its various shops.

Crane business the past week has been without feature. The Pennsylvania Railroad has taken bids for the 2 60-ton 70-ft. cranes for Altoona and has still to close for one 10-ton crane. The Morgan Construction Co., Worcester, Mass., has bought one of 20 tons capacity, the American Gas & Electric Co., 30 Church Street, New York, a 5-ton 103-ft. span grab bucket unit for its plant in Virginia, the Sun Shipbuilding Co., two for its yard at Chester, Pa. The Donner Steel Co., Buffalo, is in the market for one 25-ton locomotive crane. Large span cranes of 20 and 50 tons capacity will be required for a proposed foundry at Philadelphia for the Taylor-Wharton Iron & Steel Co., High Bridge, N. J.

The Fire Gun Mfg. Co., 115 Fourth Avenue, New York, has received large contracts from the Government for fire-extinguishing apparatus and will purchase equipment to enable it to double its output.

The Nitrogen Products Co., Greene, R. I., is in the market for a new or good second-hand pipe cutting and threading machine to take 4 to 8-in. sections, quotation to cover motor-driven unit and alternate power drive f.o.b. Greene, R. I.

The Newton-Humphreville Co., Newark, N. J., distributor of the Nash motor truck, has removed from 124 Washington Street to 520 Broad Street, where it will operate a machine shop, 50 x 100 ft., for assembling and repair.

A Right-Angle Bend in a Cold Iron Pipe 6 In. in Diameter Was Made in 9½ Min. with a New Pipe-Bending Machine Built by the American Pipe Bending Machine Co., Boston

The Victor Gauge & Ordnance Tool Corporation, New York, has been incorporated with a capital of $10,000 by W. J. Dorak, Jr., F. G. Cathrall and G. R. Stoeppner, 120 Broadway.

The Bulkrug Machine Corporation, New York, has been incorporated with a capital of $10,000 by G. Keiser, R. E. Nebel and M. F. Gerz, 732 Van Ness Avenue, to manufacture machinery.

The Queen Brass & Copper Co., New York, has been incorporated with a capital of $50,000 by T. Moers, 120 West Seventieth Street; L. Hecht and S. Ecker, 1379 Lexington Avenue, to manufacture metal specialties.

The Whale-Back Wheel Corporation, New York, has been incorporated with a capital of $18,000 by P. Duffy, J. White and H. Lesser, 956 West 156th Street, to manufacture automobile wheels.

The Electrical Repair Co., has leased the three-story building at 240-42 West Twenty-fifth Street, New York, for a term of years as its works.

The Advance Drill Press Co., New York, has been incorporated with a capital of $5,000 by D. Getz, R. Trubner and R. Haberman, 320 Broadway, to manufacture drill presses, etc.

The Seamless Process Co., Audubon, N. J., has been incorporated with a capital of $125,000 by George A. Aldrich, Charles E. Doyer and William R. Evans, to manufacture metal products.

The Elizabethtown Water Co., 68 Broad Street, Elizabeth, N. J., is negotiating with the State Board of Conservation and Development for permission to build a new motor-driven pumping plant above the Landing Bridge, vicinity of Milltown, to cost about $150,000.

The Electric Welding Co., 764 Court Street, Brooklyn, has had plans prepared for a one-story addition, 50 x 50 ft., on Court near Bogart Street.

The Stiers Corporation, New York, has been incorporated with a capital of $20,000 by W. Rossman, M. Samuels and J. R. Roth, 180 St. Nicholas Avenue, to manufacture safety guards for machinery.

The Stamping Products Corporation, 120 Broadway, New York, maker of stamped paper and other products, has arranged for a one-story plant, 50 x 200 ft., at 73-77 Wooster Street, to cost $15,000.

The Cartung Research & Mfg. Co., New York, has been incorporated with a capital of $12,000 by E. Knox, A. S. Pinkus and B. Leavitt, 165 Broadway, to manufacture automobile and airplane parts.

The Acme Steel Goods Co. of New York, New York, has been incorporated with a capital of $10,000 by J. J. Silver, H. G. Merrill and A. C. Kahn, 650 West End Avenue.

The Northport Shipbuilding Corporation, New York, has been incorporated with an active capital of $115,000 by T. J. Fallon, M. S. Reeves and R. Burke, 1482 Broadway.

The Ordnance Department, Washington, is having plans prepared for a hydroplane station and plant at Fort Hancock, N. J., to cost about $400,000. The work will include hangars, shop facilities, etc. Gen. R. C. Marshall, Jr., is in charge. The department is also having plans prepared for a proving ground at Elizabethport, N J., to include laboratory, magazine and other buildings, with estimated cost at about $110,000.

The National Clutch Co., Inc., 544 West Twenty-seventh Street, New York, will occupy the plant of the Empire Metal Products Co., Irvington, N. Y., recently acquired, for the manufacture of hydraulic clutches. The present works consist of a main three-story building.

The New York, New Haven & Hartford Railroad, Grand Central Terminal, New York, has commenced the construction of a one-story addition to its machine shop at Maybrook, N. Y., to cost $10,000.

The Ordnance Department, Washington, will build four one-story plants at Baldwin, N. Y., for the production of munitions. The structures will be 90 x 100 ft., 30 x 100 ft., 30 x 40 ft., and 30 x 31 ft., to cost $70,000.

The Sprague Electric Works of the General Electric Co., Watsessing Avenue, Bloomfield, N. J., will soon call for bids for its proposed pattern shop addition, two stories, estimated to cost $50,000.

The Government has arranged for speeding up the construction of the shell-loading plant at May's Landing, N. J., to be operated by the Bethlehem Loading Co., subsidiary of the Bethlehem Steel Co. The plant will consist of 12 units to form the main ammunition works. Contract has been let to Cramp & Co., Denckla Building, Philadelphia, for an electric power plant at the site, and bids are now being taken for a forge shop.

The International Arms & Fuze Co., Bloomfield, N. J., has awarded a contract to the Truscon Steel Co., 110 West Fortieth Street, New York, for an addition 100 x 200 ft., to cost $17,000.

The J. Birtwistle Brass Foundry, Jersey City, N. J., has filed notice of organization to operate a plant at 877 Communipaw Avenue. J. H. Birtwistle, 160 Boyd Avenue, and Hector W. H. McIntyre, 355 Union Street, head the company.

The Federal Welding Co., 449 Pacific Avenue, Jersey City, N. J., has filed notice of organization to manufacture cutting and welding machinery. Joseph Krieg, 97 Randolph Avenue, heads the company.

The Emergency Fleet Corporation, Philadelphia, has acquired under lease the two-story concrete plant of the Empire Floor & Wall Tile Co., Metuchen, N. J., to be used as a works for the production of ship specialties.

J. Sturm & Son, 401-3 Market Street, Newark, N. J., operating a wagon manufacturing plant, will immediately rebuild the section of their plant recently destroyed by fire. The new structure will be one-story, brick, 75 x 85 ft. and 35 x 65 ft., with extension 15 x 78 ft., and is estimated to cost $20,000.

The Diamant Tool & Mfg. Co., Newark, N. J., has been incorporated with a capital of $60,000 by Sidney Diamant and Jacob Wehrlust.

Fire Oct. 14 destroyed the main building at the plant of the Rubber & Celluloid Products Co., Wilson Avenue, Newark, N. J., operated under the name of the Rubberset Co., with a loss of about $100,000. The structure was two stories, about 40 x 200 ft., and it is understood will be rebuilt.

The Surgical Instruments Mfg. Co., Newark, N. J., has been incorporated with a capital of $50,000 by Philip C. Donner, Henry Otten and Charles E. Francke.

The Air Reduction Co., 120 Broadway, New York, is said to be negotiating for property at Fulton, near Richmond, Va., as a site for a plant for the manufacture of oxygen, nitrogen, etc. The initial works will be 100 x 400 ft., and give employment to 100 persons.

The Elder Arms & Aeroplane Co., New York, has been incorporated with an active capital of $16,750 by A. J. Norton, F. Gilroy and W. A. Read, 358 Fifth Avenue.

The Standard Appliance Co. of America, New York, has been incorporated with a capital of $95,000 by J. L. Volz, E. Goodman and N. Shaw, 32 Cooper Square, to manufacture telephone equipment.

The Walker Vehicle Co., Chicago, has acquired, under

lease, the new building now being erected at Jackson Avenue and Sixth Street, Long Island City, N. Y., for an eastern plant. It has acquired the business of the General Vehicle Co., whose former plant at Long Island City is now being used by the Government.

The Abe Uris Iron & Steel Corporation, 423 Kent Avenue, Brooklyn, has acquired the Kent Iron & Steel Corporation, with works on South Eighth Street, Brooklyn.

A one-story boiler plant, 25 x 50 ft., will be constructed at the new factory of Julius Kayser & Co., 45 East Seventeenth Street, New York, now in course of erection on Classon, near De Kalb Avenue, Brooklyn.

The Arion Iron Works, 122 East 132d Street, New York, have leased property at 780-84 Southern Boulevard for an extension.

The New York & Queens Electric Light & Power Co., 444 Jackson Avenue, Long Island City, has acquired property on Lawrence Street, Flushing, fronting on Flushing Creek, for about $50,000, for extensions.

E. B. Estes & Sons, 362 Fifth Avenue, New York, manufacturers of handles and other wood specialties, have incorporated with E. B. Estes & Sons Woodworking Co., with a capital of $100,000, to operate a wood-working plant. J. F. Crater and W. F. Davis are the incorporators

A two-story plant, about 41 x 115 ft., to cost $35,000, will be constructed by the General Chemical Co., 25 Broad Street, New York, at Washington and Halle avenues, Laurel Hill, Long Island City.

The Electric Transport Co., New York, has been incorporated with a capital of $100,000 by J. C. Norris, R. Sugden and W. A. Anderson, 165 Broadway, to manufacture motor-driven conveying equipment, underground carriers, etc

The Adriance-Bate Steam Fuel Economy Corporation, Brooklyn, has been incorporated with a capital of $100,000 by F. H. Moses, J. T. Berney and A. Calleson, 80 Richards Street, to manufacture mechanical equipment for cleaning boilers, etc.

Joseph Loria, Inc., 138 East Twenty-fifth Street, New York, will build a one-story machine shop at 312 East Twenty-eighth Street.

The H. P. Worth Co., New York, has been incorporated with a capital of $50,000 to manufacture hardware and metal-ware products. H. P. Worth, 77 Steel Avenue, New Dorp, S. I.; H. Irvin, Newark, N. J., and P. Doblin, 4277 Brandon Avenue, Brooklyn Manor, N. Y., are the incorporators.

The Elevator Engineering Corporation, New York, has been incorporated with a capital of $25,000 by H. Pearsall, W. Valis and A. S. Mayer, 208 East Tremont Avenue.

The borough officials, North East, Pine Plains, N. Y., are considering the erection of an electric power plant. Application has been made to the Public Service Commission.

Buffalo

BUFFALO, Oct. 21.

The J. Ginther's Sons Co., 425 Broadway, Buffalo, has let contract for the erection of a two-story addition, 35 x 100 ft., to its iron foundry.

The Acme Pattern & Machine Co., Buffalo, has completed plans for an addition 30 x 52 ft. to its factory at Niagara Street and Forest Avenue.

E. S. Elwood, secretary State Hospital Commission, Albany, is taking bids for the reconstruction of a boiler room, installation of boilers and changes in central heating plant at the Utica State Hospital, Utica, N. Y.

The Pittsburgh Steamship Co., Erie, Pa., will erect and equip a machine shop on a site recently acquired in that city.

The Acheson Graphite Co., Niagara Falls, N. Y., has let contract to the J. W. Cowper Co., Buffalo, for the construction of an addition to its plant at Buffalo Avenue and Portage Street, to cost $15,000; also for three factory buildings at its North Buffalo plant on the River Road and the New York Central Railroad, 60 x 102 ft., 40 x 80 ft., and 40 x 40 ft.

The North Country Shipbuilding Corporation, Ogdensburg, N. Y., is having plans prepared for a shipbuilding plant which it will erect at an estimated cost of $150,000.

The Eclipse Machine Co., Elmira, N. Y., has let contract to the Lowman Construction Co., for four additional buildings, 50 x 100 ft., 36 x 40 ft., two stories, and 60 x 108 ft. and 45 x 100 ft., one story.

The Niagara Machine & Tool Co., Buffalo, is taking bids for an extension to its crane runway.

The Strong Steel Foundry Co., 33 Norris Street, Buffalo, has awarded contract to the Lackawanna Bridge Co., Buffalo, for a one-story addition, 40 x 100 ft.

The Buffalo Pressed Steel Co., 800 Kensington Avenue, Buffalo, has filed plans for a one-story addition, 22 x 54 ft. and 22 x 38 ft., at Liberty and Kensington avenues.

The Curtiss Aeroplane & Motors Corporation, Buffalo, is planning to bring its local plants up to a maximum capacity of 100 battle airplanes daily, effective Jan. 1. To accomplish this, it is proposed to double the present working force of 10,000, and it is expected that the present plant buildings will be large enough to provide for this expansion without need for further extensions at this time. The company has recently secured a new contract for over 14,000 additional airplanes for the War Department. James E. Kepperley is general manager.

The American Car & Foundry Co., 370 Babcock Street, Buffalo, has awarded contracts to Ulirich & Flieri, East Ferry Street, for two one-story additions, the first a foundry, 50 x 120 ft., the other a punch shop. A permit has also been issued to the company for two one-story buildings, 28 x 40 ft., on Metcalf Street.

The Pierce Arrow Motor Car Co., Buffalo, has awarded contract to the J. W. Cowper Co., Fidelity Building, for its proposed works at Tonawanda, N. Y. The structures will be located on the River Road, and will consist of one-story buildings, a testing and assembling works 100 x 260 ft., and a boiler plant 20 x 30 ft.

The Atlas Crucible Steel Co., Marine Bank Building, Buffalo, is planning a one-story addition, 80 x 100 ft., to its works on Howard Avenue, Dunkirk, N. Y.

The Metal & Wire Products Corporation, Keeseville, N. Y., has been incorporated with a capital of $50,000, by A. Ellison, H. Prevost and W. H. Thomas.

The S. & R. Folding Machine Co., Cohoes, N. Y., has been incorporated with a capital of $25,000 by E. B. Roby, S. M. Stone and N. W. Jensen, Troy.

Philadelphia

PHILADELPHIA, Oct. 21.

Dealers at Pittsburgh are making a great many quotations to the Ordnance Department, United States Steel Corporation, for the Neville Island gun and projectile plant, for which much equipment is yet to be purchased. The Pennsylvania Lines West are buying on inquiries sent out recently and there is some other railroad buying.

The Cleveland Crane & Engineering Co. has taken an order for a 25-ton overhead crane from the Atlas Crucible Steel Co., Dunkirk, N. Y.

The forge shop to be erected by the Midvale Steel & Ordnance Co., Widener Building, Philadelphia, at its Nicetown works, will be one-story, brick, steel and concrete, 90 x 242 ft., with two-story wing, 20 x 61 ft.

The Philadelphia & Reading Railroad, Reading Terminal, Philadelphia, has awarded a contract to Daniel H. Hunter, Reading, Pa., for an air compressor building at its Rutherford shops. At this location is building a machine shop and boiler plant to cost about $45,000, while at Bethlehem, Pa., foundation work has been commenced for a one-story engine and power house to cost $200,000. Bids are now being taken for a coal station at the Saucon Creek Yard, South Bethlehem.

A one-story, motor-driven pumping plant to cost $35,000 will be constructed by the New York Shipbuilding Co., Camden, N. J., at its works, Broadway and Fairview Avenue. Armstrong & Latta, 110 South Broad Street, Philadelphia, are the building contractors.

The Delaware Shipbuilding & Repair Co., 308 Chestnut Street, Philadelphia, has purchased 12 acres fronting on the Delaware River, at Birch and Erie streets, Camden, N. J., for a shipbuilding works.

The Pennsylvania Coal Co., Pittston, Pa., will build an extension to its boiler plant to cost $10,000.

The Barrett Mfg. Co., Bermuda and Margaret streets, Philadelphia, is planning improvements and alterations in its five factory buildings recently damaged by fire. The work is estimated to cost about $10,000. The company has completed foundation work for a two-story plant, 40 x 50 ft., at the corner of Margaret and Bermuda streets, to cost a like amount.

The Lormer Armored Tire Co., Philadelphia, has been incorporated in Delaware with a capital of $3,000,000 by E. M. MacFarland and J. Vernon Pimm.

The William Cramp & Sons' Ship & Engine Building Co., Beach and Ball streets, Philadelphia, has filed plans for a one-story extension at Richmond and Bath streets to cost $4,000.

In connection with the plans of the Emergency Fleet Corporation, Philadelphia, to build at least 10 large dry docks in different parts of the country, it is proposed to build two such docks at Philadelphia. These will have a capacity of about

10,000 to 20,000 tons, with pontoons about 110 ft. long, with wings of steel construction.

The Pennsylvania Railroad, Broad Street Station, Philadelphia, is building a machine shop and engine house at Edgemoor, to cost about $400,000.

The American Pulley Co., 4200 Wissahickon Avenue, Philadelphia, has filed plans for a two-story reinforced-concrete addition, 50 x 80 ft., on Wissahickon Avenue, to cost $30,000.

The Atlantic Refining Co., 3144 Passyunk Street, Philadelphia, has filed plans for a one-story addition to its tin-working shop at Allegheny and Germantown avenues.

The Tacony Ordnance Corporation, Milnor and Bleigh streets, Philadelphia, has awarded contract to the F. W. Mark Construction Co., Finance Building, for a one-story brick machine shop, 72 x 128 ft., to cost $50,000.

The Universal Machine & Tool Corporation, Philadelphia, has been incorporated with a capital of $100,000 by F. R. Hansell, Land Title Building, Philadelphia, and S. C. Seymour, Camden, N. J.

A two-story boiler plant, 38 x 46 ft., to cost $20,000, will be erected by the Baugh & Sons Co., 20 South Delaware Avenue, Philadelphia, at its works at Morris and Delaware avenues, for factory operation.

The Nicetown Plate Washer Co., 1824 Juniata Street, Philadelphia, manufacturer of bolts, nuts, washers, etc., has acquired a factory and property at Juniata and Clarissa streets from C. W. Lord, to be used as an extension to its works.

Construction has been commenced by the Armour Leather Co., Chicago, for the rebuilding of its tanning plant and works at Noxen, Pa., recently destroyed by fire. The cost is estimated at $1,000,000. A one-story boiler plant to cost about $50,000 will also be constructed.

The Carpenter Steel Co., Reading, Pa., is having plans prepared for a one-story power plant on the River Road for works operation.

The Universal Rolling Mill Co., Bridgeville, Pa., has acquired property consisting of about 5¾ acres adjoining its works for a proposed extension.

The York Safe & Lock Co., York, Pa., has broken ground for a two-story pattern shop and foundry, 60 x 100 ft., to cost $60,000, and a one-story general shop addition, 90 x 200 ft., to cost $30,000, at its plant. S. Forry Laucks is president.

The Edgewater Steel Co., Farmers Bank Building, Pittsburgh, has commenced the erection of a one-story addition to its steel works at Edgewater to cost about $50,000.

Baltimore

BALTIMORE, Oct. 21.

The Bartlett-Hayward Co., Scott and McHenry streets, Baltimore, will build a 100 x 140 ft. shell-loading building to cost about $40,000; a one-story frame, 100 x 105 ft. tool house to cost about $24,250; a one-story, 48 x 54 ft. boiler house to cost $15,500; a one-story, 23 x 34 ft. pump house to cost $3,000, and a one-story, 10 x 20 ft. oil house to cost $500. The plans are by Parker, Thomas & Rice and the contracts have been awarded to Morrow Brothers, Fidelity Building.

Improvements to be made at the plant of the Union Shipbuilding Co., Fairfield, Md., include a machine shop, boiler house and 10 shipways.

The Monkton Roller Mills, Mount Washington, Md., is seeking prices on 50-hp. steam engines and roller mill machinery. Otis E. McCoy is president.

The Vesuvius Plow Co., Vesuvius, Va., has been incorporated with $50,000 capital stock. W. F. Humphries is secretary.

The Interstate Equipment Corporation, Norfolk, Va., is seeking prices on a 5-ton locomotive crane.

The Baltimore & Ohio Railroad, Baltimore, has awarded contract to W. Dwyer, Second National Bank Building, Cincinnati, Ohio, for a one-story engine house and shop, 175 x 300 ft., at Keyser, W. Va., to cost $200,000, and for a one-story engine house at Clarksburg, W. Va.

The one-story addition to be erected by the Union Shipbuilding Co., Fairfield, Md., at its shipyard, will consist of a machine shop, boiler house and ship construction buildings. The extension will cost $150,000. The Hughes Foulkrod Co., Commonwealth Building, Philadelphia, is the building contractor.

In addition to the shop extensions and improvements to its Hagerstown, Md., works, the Western Maryland Railroad, Baltimore & Ohio Building, Baltimore, has awarded contract to Price Construction Co., Maryland Trust Building, Baltimore, for a one-story addition to its railroad shop at Thomas, W. Va., to cost $40,000, including alterations in the present structure.

The Victor Valve Co., Herndon, Va., recently incorporated with a capital of $50,000, has completed its organization with present headquarters at 1115 Fourteenth Street, N. W., Washington. The company is planning the establishment of a plant for the manufacture of valves and kindred specialties, and will purchase a number of machine tools, including lathes, drill presses and grinders, as well as foundry equipment. Fred C. Stelzer is president.

The William G. Abbott Co., Milford, Del., has been incorporated with a capital of $100,000 by William G., William S. and Francis H. Abbott, to build vessels.

The Bureau of Yards & Docks, Washington, has awarded contract to the Fleishmann Construction Co., 531 Seventh Avenue, New York, for the new naval torpedo assembly plant at Alexandria, Va., to consist of a main four-story works, 122 x 299 ft., and two-story building, 114 x 245 ft., of reinforced concrete, to cost $1,075,000, including equipment.

The Crown Cork & Seal Co., Guilford Avenue, Baltimore, has commenced the construction of its proposed works at Highlandtown for the manufacture of ammunition for the Government. The initial plant will cost about $30,000.

The Bureau of Yards & Docks, Navy Department, Washington, has awarded a contract to the Wise Granite & Construction Co., Richmond, Va., for a boiler works at Hampton Roads, Va., to cost $100,000.

The Ingram Motors Corporation, Augusta, Ga., has been incorporated with a capital of $500,000, to manufacture motors, carbureters, etc., will operate a local plant.

The War Department, Washington, is taking bids for a power house at Ohio River dam No. 25, near York, W. Va. Also for similar power plants at dam No 21, near Morgan, and dam No. 23, near Millwood, W. Va. The Engineering Department, Wheeling, W. Va., is in charge.

The St. Petersburg Maritime & Construction Co., St. Petersburg, Fla., recently incorporated with a capital of $250,000, is planning the purchase of machinery for its proposed wooden shipbuilding plant, upon which construction work has been inaugurated. L. B. Brown is president.

The Hillsborough Shipbuilding Co., Tampa, Fla., has recently been organized to operate a local barge-building plant. The erection of two shipways has been commenced, and it is proposed to inaugurate construction work on a machine shop, rigger shop, mold loft and other structures. W. R. Beckwith is secretary.

A. A. Barker, Bradentown, Fla., and others are organizing a shipbuilding company, with initial capital of $50,000, to build and operate a local shipyard.

The Charleston Consolidated Railway & Lighting Co., Charleston, S. C., has completed plans for extensions to its electric generating plant to double the capacity. It is also proposed to build additions to the present transmission system. The expansion is estimated to cost $700,000.

Chicago

CHICAGO, Oct. 21.

However anxious the Central Powers may be for peace their state of mind is having no effect on the machine tool trade, for the month promises to be one of the best this year, the demand coming from manufacturers of munitions. There is no let-down in any direction. The big plant of the Symington-Chicago Corporation, which probably will not be ready to manufacture shells until near the end of the year, is in the market for more tool-room equipment, including lathes, milling machines and drill presses. The Holt Mfg. Co., Peoria, Ill., manufacturer of caterpillar tractors and tanks, is in the market for equipment for a new building.

Mason Davis & Co., Inc., Chicago, have a contract for 6-in. Stokes trench mortars and will require equipment, while the O'Malley-Beare Valve Co., Chicago, which has heavy orders for Government needs, plans on tripling its equipment. Small inquiries and orders constitute a big aggregate of business, the one distressing feature being the quick deliveries which are wanted.

Slow collections, which have been mentioned heretofore, concern the trade more than ever, although it is recognized that the firms asking additional time are good risks. This, however, does not remove the fact that delayed payments tie up capital that otherwise might and should be working.

That the inroads of influenza on shop workers has made itself felt is evidenced by the following telegram sent by Major General C. C. Williams, Army Ordnance Department, to various plants engaged in war work:

"Influenza is interfering with our munitions plants throughout the country. It is up to the men and women who are still on the job to make good the loss of their comrades.

Speed up! Your country needs every bit of your energy to-day for the men in France."

The telegram has been posted in plants engaged in war work.

N. C. Hurley, president Hurley Machine Co., Chicago, has purchased about three acres improved with modern factory buildings at Fifty-fourth Avenue and Nineteenth Street, opposite the plant of the company. It is stated that the purchase represents a personal investment by Mr. Hurley. In July, 1917, the Hurley Machine Co. purchased two acres adjoining the tract now taken over.

Several one-story additions are being made to the plant of the Holt Mfg. Co., Peoria, Ill., which comprise three extensions to the machine shop and two to the erecting building. A power plant is also being added.

The Austin Co., general contractor for industrial buildings, has moved its Chicago office to 1374 Continental & Commercial Bank Building. The company has the contract for a one-story addition, 90 x 100 ft., to a factory in Mattoon, Ill., for the Chuse Engine Works, to cost $20,000.

The Amalgamated Machinery Corporation, 3700 South Racine Avenue, is building a one-story restaurant, 21 x 59 ft., for its employees engaged in the manufacture of special shell-making lathes and gun-boring machines.

The Interstate Iron & Steel Co. has been granted a permit for the erection of a two-story machine shop, 50 x 120 ft., at its works at 118th Street, Chicago, to cost $25,000. The contract has been placed with the Worden-Allen Co., engineer and contractor, 208 South La Salle Street. The Interstate Company is also building a structure for the comfort of its employees.

The Grand Rapids Brass Co., Grand Rapids, Mich., will at once erect a three-story and basement addition to its factory, to be completed Jan. 1.

The James A. Brady Foundry Co., Forty-fifth Street and Western Avenue, Chicago, has awarded a contract to the E. W. Sprowl Co., 1120 West Thirty-fifth Street, for a one-story addition to its foundry, 90 x 90 ft., including new core oven, to cost about $30,000.

The Cribben & Sexton Co., North Sacramento Avenue, Chicago, has commenced remodeling a one-story structure, 25 x 90 ft., at Sacramento and Huron streets, for a new machine shop.

The Standard Washing Machine Co., Chicago, has been incorporated in Delaware with a capital of $50,000 to manufacture washing machines and machinery. W. V. Rifle, W. E. Fowles, A. R. Goddard and F. T. Muncie, Chicago, are the incorporators.

The American Truck & Airplane Co., Chicago, has changed its name to the American Truck & Trailer Corporation.

The Great Northern Railroad, St. Paul, Minn., is considering plans for improvements and extensions in its car and locomotive shops at Great Falls, Mont., including the installation of new equipment, to cost about $200,000.

Milwaukee

MILWAUKEE, Oct. 21.

A steadily increasing demand for milling machines by manufacturers of aircraft engines is noted by local makers, ranging from the lightest to the heaviest types. The call for lathes and other tools also continues very heavy and comes principally from manufacturers of munitions. New business is confined mostly to single tools or small lots, with here and there an order for a round number of machines.

The following Government contracts have recently been awarded to local manufacturers: Federal Pressed Steel Co. and Pressed Steel Tank Co., Livens gas shells; Chain Belt Co., mill chain; Roberts Brass Co., Milwaukee Flush Valve Co., Rundle-Spence Mfg. Co., valves; Bucyrus Co., miscellaneous supplies; Stowell Co., malleable blocks; Industrial Controller Co., spares for motors; Schartow Mfg. Co., double eye-loops; National Enameling & Stamping Co., two contracts for boilers, $60,000; Harley-Davidson Motor Co., motorcycles; Milwaukee Tank Works, tanks; Globe Seamless Steel Tubes Co., tubing.

The Northwest Engineering Works, Green Bay, Wis., which is constructing 34 ocean-going tugs for the Emergency Fleet Corporation, has acquired the garage and service building of the Overland-Green Bay Co., Green Bay, which it will convert into a general machine shop, pipe-fitting, plumbing and pattern works. The building affords more than 40,000 sq. ft. of floor space. A considerable list of tools and other equipment is being purchased.

Kuethe & Kuehl, Marshfield, Wis., machinists, have purchased a two-story building on South Chestnut Street and will convert it into a general machine shop. Occupancy will be taken early next spring. A small list of tools will be purchased.

The Manitowoc Machine & Foundry Co., Manitowoc, Wis., has been reorganized under the stye of Manitowoc Foundry Co., and the capital stock increased from $25,000 to $50,000, following the acquirement of the principal interest by David Balkansky from S. G. Smith. The new owner intends to enlarge the works and concentrate largely upon the manufacture of iron castings, although some machine shop facilities will be retained. Mr. Balkansky is one of the owners of the Manitowoc Iron & Metal Co.

The Racine Tool & Machine Co., Racine, Wis., has perfected and obtained basic patent rights on a special combination machine tool which it will manufacture in addition to its line of high-speed cutting machines. It is particularly adapted for broaching slots, milling key-ways and key-seats and can be used as a metal sawing machine for gear-cutting and numerous other purposes.

The Northern Conveyor & Mfg. Co., Milwaukee, has been incorporated with a capital stock of $5,000 to manufacture conveying systems and appliances. The incorporators are J. P. Donnelly, J. M. Clarke and H. C. Carter.

The Milwaukee Brass Mfg. Co., 249-251 Lapham Street, is making alterations in its plant and installing some new equipment to increase its capacity.

The Beloit Iron Works, Beloit, Wis., has awarded a contract to John Schneiberg & Co. for the construction of a core-room and pattern-shop addition of reinforced concrete and brick, costing about $20,000.

The Racine Handle Co., Racine, Wis., has been incorporated with a capital stock of $10,000 to manufacture wooden handles. The incorporators are Ralph E. Pugh, Robert V. Steele and M. E. Walker.

The Gorton Fence Co., Racine, Wis., has changed its name to the Waukegan Machine Tool Co.

The property of the Killen-Strait Mfg. Co., Appleton, Wis., manufacturer of farm tractors and engines, will be offered for sale at public auction by Charles L. Marston, receiver, on Wednesday, Dec. 11, at 10 a. m. As noted, the company was placed in the hands of a receiver on petition of stockholders on Sept. 20 and has since been operated as a going concern under the direction of Receiver Marston. The property consists of 2 acres, a main brick building 64 x 200 ft., containing machine shop and offices; a wing, with foundry, blacksmith, tin and pattern shop, and a frame warehouse, 30 x 100 ft. The machinery includes three lathes, two radial drills, two drill presses, one gear cutter, one milling machine, one drop forge press and other equipment. The plant is equipped with electrical power and is located along the Chicago & North Western Railroad.

The Flint Mill Co., 36 Mack Block, Milwaukee, has changed its corporate style to the Flint Mill & Furnace Co. T. H. Spence is secretary.

The Clintonville Power Co., Clintonville, Wis., has been organized by the stockholders of the Topp-Stewart Tractor Co., Clintonville, to take over and operate the new hydro-electric power plant being completed at Heyman Falls, on the Embarrass River. The current will be marketed for industrial and domestic purposes. The new company is formed to comply with Wisconsin laws regulating public utilities, but the ownership will be identical with that of the tractor company. The administration of the new concern will be vested in the following trustees instead of directors and officers: Levi C. Larson, Dr. Charles Topp, L. Cole, H. F. Zarling and Frank Buchholtz, Clintonville; F. H. Josslyn, Oshkosh, Wis., and William E. Wilson, Tigerton, Wis.

The Northern Wood Products Co., Chicago, is building a new plant at Glidden, Wis., for the manufacture of hardwood handles, to replace the factory recently destroyed by fire with a loss of $35,000. N. A. Thomas is manager at Glidden.

Detroit

DETROIT, Oct. 21.

The extensive additions under construction by manufacturers engaged on Government work have resulted in large orders for equipment.

The entire plant of the Olds Motor Works, Lansing, Mich., will be devoted to aircraft production and the manufacture of Liberty motors will begin at once. Extensions will be erected and with the additional equipment the conversion will entail an expenditure estimated at $1,250,000. At least 2000 more workers will be added to the payroll.

The Paige-Detroit Motor Car Co., Detroit, is fast approaching the 100 per cent war basis and in a few weeks all the resources of the company will be devoted exclusively to Government service. When it has used its present supply of materials it will make no more passenger cars.

Theodore H. Millington and Charles W. Chapman, Detroit, have purchased the controlling interest in the Michigan Press Co., Ypsilanti, Mich., manufacturer of the Perkins power press. Mr. Millington, who was at one time connected with the General Motors Co., is president of the reorganized company; Mr. Chapman, secretary and treasurer, and C. A. Perkins, vice-president. The company expects to bring out a new four-wheel tractor. About forty men will be employed at the start.

John Brennan & Co., Twenty-fourth Street and the Michigan Central Railroad, Detroit, manufacturers of steam boilers, etc., have awarded a contract to Frank H. Davis, Penobscot Building, for the construction of an addition to their plant to cost about $75,000.

The Blackmer Rotary Pump Co. has received a Government order for pumps.

The Cummings & Moore Graphite Co., Flint, Mich., is taking bids for the construction of a two-story addition to its grinding works, 135 x 135 ft.

The Bay City Foundry & Machine Co., Bay City, Mich., has commenced excavation work for the erection of a new one-story foundry, 110 x 200 ft., to cost $50,000.

The Briscoe Motor Co., Jackson, Mich., is building a one and two-story addition to its plant, 100 x 120 ft., to cost about $25,000.

The Cleveland-Cliffs Iron Co., Ishpeming, Mich., will build two new one-story electric power plants, to be located at its works at Ishpeming and Republic, Mich.

The Michigan Smelting & Refining Co., Hamtramck, Mich., is taking bids for the construction of a one-story power plant, 45 x 48 ft., to cost $10,000.

The Bay City Industrial Works, Bay City, Mich., has awarded a contract to the Austin Co. for the construction of a new one-story machine shop, 120 x 250 ft., to cost, with equipment, $100,000.

Cleveland

CLEVELAND, Oct. 21.

The American Multigraph Co. is buying about 300 machines for the Cleveland plant of the Ford Motor Co., which it recently acquired for the manufacture of time fuses for shells. The equipment will include 100 automatic screw machines, 75 to 100 drilling machines, 50 hand screw machines, several hand milling machines and complete tool room equipment.

The demand from other plants engaged largely on Government work continues very active. The Studebaker Corporation the past week purchased six turret lathes and five screw machines and is inquiring for four Lincoln type milling machines. The Willys-Morrow Co., Elmira, N. Y., purchased 12 screw machines, the Steel Products Co., Cleveland, 17 screw machines, the American Brake Shoe & Foundry Co., Erie, Pa., 16 turret lathes, and the Edison Phonograph Works, Orange, N. J., 15 screw machines. The National-Acme Co., Cleveland, which recently bought a round lot of screw machines, placed another order for 45. The Cadillac Motor Car Co., Detroit, is inquiring for two horizontal boring mills. The Matthews Engineering Co., Sandusky, Ohio, is still buying equipment. The American Steel Machinery Co., Mansfield, Ohio, is buying some additional machinery for its shell plant, and the Bucyrus Machine & Tool Co., Bucyrus, Ohio, is adding to its machine tool equipment.

Local machinery houses report some falling off in business the past week due, to some extent, to the fact that interest has been centered on the Liberty loan campaign. There is a fair demand for small lots of tools to round out equipment rather than for complete equipment for a new plant or unit. The possibility of an early peace has had some effect on the market, causing a few manufacturers doing indirect Government work to defer purchases. They feel that should there be an early ending of the war their work would soon be along different lines and they can get along with the machinery on hand.

The production division of the Ordnance Department, Washington, is inquiring of local machinery dealers for a plain grinding machine, two surface grinders, an 8-spindle drilling-machine and a plain drilling machine.

The Ferguson Co., Cleveland, has taken a contract for a building, 150 x 540 ft., for the National Cash Register Co., Dayton, Ohio. For the present it will be used for storage purposes, making available other factory space for the manufacture of pistols.

The Cleveland Welding & Mfg. Co. will erect a new power house, 80 x 100 ft., contract for which has been placed with the Hunkin-Conkey Construction Co., Cleveland.

The Efficiency Vise & Wrench Co., Cleveland, has been incorporated with a capital stock of $25,000 by William S. Ducharme, Earl L. Larnaway and others.

The Blanchard Automatic Machine Co., Cleveland, has been organized with a capital stock of $10,000 by C. R. Wedler, A. H. Wedler and others.

The Cleveland Electro Metals Co., 2391 West Thirty-eighth Street, plans to erect a one-story addition at an estimated cost of $50,000.

The S. K. F. Steel Barrel Co., 77030 Jones Road, Cleveland, has placed a contract for a two-story factory, 40 x 108 ft.

The Naab Mfg. Co., maker of blow torches, and the Electric Motors Co., both of Cleveland, have been combined under the name of the North American Mfg. Co. The plant is at 5902 Carnegie Avenue.

The Canton Steel Foundry Co., Canton, Ohio, is erecting an addition to cost $10,000.

The Tungsten Steel Co., Toledo, Ohio, has been incorporated with a capital stock of $30,000 by A. Broeder and others.

The Norwalk Drilling Tool Co., Norwalk, Ohio, has taken a large order for forgings for 75-mm. guns.

The Wapakoneta Machine Co., Wapakoneta, Ohio, is erecting a new factory, 50 x 80 ft., to be used as a heat treating department.

To keep apace with the Government demand for airplane motor parts, the Steel Products Co., 2196 Clarkwood Road, S. E., Cleveland, will erect a new plant which, with equipment, will cost about $155,000. The building will be 90 x 123 ft., of concrete and brick. Contracts were recently let for a fourth story to the main building, which is 60 x 125 ft., and for a power plant, 70 x 100 ft. The total cost of improvements amounts to about $200,000.

Cincinnati

CINCINNATI, Oct. 21.

The inquiry sent out early this month by the plant section, production department division, Ordnance Department, Washington, for approximately 4000 lathes has not developed into any local orders. The lathes are for turning shells, and practically all are from 20 to 24-in. swing with 6 to 8-ft. beds, with hollow spindles large enough to take 155-mm. shells inside the spindle. As the design of these lathes is not standard some changes will be required that will doubtless cause delay in their manufacture.

Numerous inquiries and orders for different sized lathes have been received lately, but the largest order placed was for 25 lathes to be delivered in April. Smaller orders from firms making munitions indicate that peace talk has had no effect in slowing up production of machine tools.

Within the past few days orders have been received from the Navy Department for approximately 500 portable electric drilling machines to be distributed among the navy yards at Boston, Philadelphia, Brooklyn, Norfolk and Mare Island. Portable electric grinders have also been in demand, but have not been ordered in such large numbers.

Some uneasines is felt as to a future supply of steel necessary to carry on the work of building machine tools and other shop equipment urgently needed. Shafting is not as easy to get for prompt shipment, and in some cases there are delays in shipping certain sizes of high-speed steel. Foundries are making fairly prompt deliveries of castings.

The Ferro Concrete Construction Co., Cincinnati, has been awarded the general contract by the small arms section, War Department, for remodeling and enlarging the former plant of the R. K. LeBlond Machine Tool Co., in Linwood. It is understood that more than $200,000 has been set aside for the changes.

The H. Zering Mfg. Co., Cincinnati, has acquired a manufacturing plant in Oakley and expects to remove to the new location within the next 30 days. The company manufactures warehouse trucks and trailers and will be able to more than double its present output in the new plant.

The Bert L. Baldwin Co., Cincinnati, is receiving bids for the construction of a welfare building addition, 41 x 145 ft., to the plant of the Worthington Pump & Machinery Corporation, Carthage, for men and women employees. Another welfare addition to the foundry will be 50 x 110 ft., and for only men employees.

The Rybolt Heater Co., Cincinnati, has increased its capital stock from $40,000 to $60,000 and will add equipment to its foundry in Ashland, Ohio.

The H. R. Blagg Co., Dayton, has been incorporated with $30,000 capital stock by H. R. Blagg and others and will make a specialty of wrecking manufacturing and other buildings and the salvaging of machinery and building supplies.

The Piqua Mfg. Co., Piqua, Ohio, has been incorporated with $10,000 capital stock by J. L. Black and others. It is the intention to manufacture special machinery and small machine tools.

The Standard Oil Burner Co., Columbus, Ohio, has been incorporated with $200,000 capital stock by George W. Ross and others. Nothing is known as to manufacturing plans.

The Columbus Auto Parts Co., Columbus, has increased its capital stock from $75,000 to $100,000. No information is available as to plans for increasing the manufacturing capacity.

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The Federal Mfg. Co., Los Angeles, has been incorporated with a capital of $25,000 to manufacture heating specialties. Fred W. Forrester, O. H. Cope and George Long, Ls Angeles, are the incorporators.

The Graham Iron Works, Vernon, has been organized to operate a plant at 2724 Santa Fe Avenue. Charles Graham, 566 South Pacific Boulevard, Huntington Park, heads the company.

The City Commission, Sacramento, Cal., is planning for the installation of new electrically-operated pumping machinery at the city waterworks, to cost about $25,000.

The Southwestern Shipbuilding Co., East San Pedro, Los Angeles, has filed plans for the construction of a one-story addition to its machine shop at Fish Harbor. An addition will also be erected to the compressor plant.

The Woodward Garage & Truck Attachment Co., Los Angeles, has been incorporated with a capital of $10,000 to manufacture attachments and parts for motor trucks, etc. W. H. Grower, Forty-second Place, and Walter J. Little, 560 South Brand Boulevard, Glendale, are the principal incorporators.

The Department of Public Works, Los Angeles, is planning for the immediate construction of its proposed hydroelectric power plant at Haiwee Reservoir, on the route of the Los Angeles Aqueduct, to cost about $60,000. It is also planning for the construction of a similar plant on the South Fork of the Kern River in Tulare County.

The Navy Department, San Diego, has taken bids for seven new buildings to be erected at the naval air station at North Island, for a new naval air training school. The structures will cost about $60,000 and will include hydrogen generating plant, compressor shop, laboratory building, reclaimer works, blower houses and pumping plant.

The new plant to be erected by the San Joaquin Portland Cement Co., Porterville, Cal., will have an initial capacity of about 350,000 bbl. per year. The company was recently incorporated with a capital of $750,000, and has purchased tract of about 160 acres near Worth. W. J. Dinglee is head of the organization.

Roy Creighton, Upland, Cal., has leased property near Ninth Street for the establishment of a machine shop, to specialize in motor repair work.

The Metal Oxide Co., Los Angeles, has been organized to manufacture metal specialties, with a plant at 637 Antonio Street. M. C. Stukey, 6048 Pasadena Avenue, heads the company

The Salt Water Valley Water Users Association, Phoenix, Ariz., is planning for the installation of 60 electrically operated pumping plants in the Salt River Valley section. It is proposed to have the plants ready for operation about the middle of 1919. W. R. Elliott is manager.

The Great Western Power Co., Oroville, Cal., is considering the construction of a new hydroelectric power plant at Lake Almanor, to cost about $100,000. Headquarters are at San Francisco. Mortimer Fleishhacker is president.

The Ruhland Automobile Works, Los Angeles, has been incorporated with a capital of $25,000 to manufacture automobile parts, etc. T. F. and T. E. Ruhland and David E. Fulwider, Los Angeles, are the incorporators.

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The Columbia Iron & Welding Works, Astoria, Ore., recently purchased property which it will use in enlarging its plant. It is engaged on work for ships being built for the Emergency Fleet Corporation.

The Seattle Machine Works, 251 Holly Street, will build a blacksmith shop and boiler room, 41 x 60 ft., to cost, without equipment about $5,000.

The Pacific Steel & Boiler Co., Tacoma, has completed 100 boilers for the Government and is now working on its second contract, and will deliver 20 boilers per month. It employs

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The Regan Forge & Engineering Co., Los Angeles, recently incorporated with a capital of $150,000, has filed plans for the construction of a one-story addition, 50 x 60 ft. and 30 x 75 ft. James J. and J. M. Regan head the company.

The Pope Shipbuilding Corporation, Newport Beach, recently incorporated with a capital of $1,000,000, has commenced preliminary work on its plant for building steel and wooden vessels. E. D. S. Pope and Frank Scoville head the company.

The Federal Mfg. Co., Los Angeles, has been incorporated with a capital of $25,000 to manufacture heating specialties. Fred W. Forrester, O. H. Cope and George Long, Ls Angeles, are the incorporators.

The Graham Iron Works, Vernon, has been organized to operate a plant at 2724 Santa Fe Avenue. Charles Graham, 566 South Pacific Boulevard, Huntington Park, heads the company.

The City Commission, Sacramento, Cal., is planning for the installation of new electrically-operated pumping machinery at the city waterworks, to cost about $25,000.

The Southwestern Shipbuilding Co., East San Pedro, Los Angeles, has filed plans for the construction of a one-story addition to its machine shop at Fish Harbor. An addition will also be erected to the compressor plant.

The Woodward Garage & Truck Attachment Co., Los Angeles, has been incorporated with a capital of $10,000 to manufacture attachments and parts for motor trucks, etc. W. H. Grower, Forty-second Place, and Walter J. Little, 560 South Brand Boulevard, Glendale, are the principal incorporators.

The Department of Public Works, Los Angeles, is planning for the immediate construction of its proposed hydroelectric power plant at Haiwee Reservoir, on the route of the Los Angeles Aqueduct, to cost about $60,000. It is also planning for the construction of a similar plant on the South Fork of the Kern River in Tulare County.

The Navy Department, San Diego, has taken bids for seven new buildings to be erected at the naval air station at North Island, for a new naval air training school. The structures will cost about $60,000 and will include hydrogen generating plant, compressor shop, laboratory building, reclaimer works, blower houses and pumping plant.

The new plant to be erected by the San Joaquin Portland Cement Co., Porterville, Cal., will have an initial capacity of about 350,000 bbl. per year. The company was recently incorporated with a capital of $750,000, and has purchased tract of about 160 acres near Worth. W. J. Dinglee is head of the organization.

Roy Creighton, Upland, Cal., has leased property near Ninth Street for the establishment of a machine shop, to specialize in motor repair work.

The Metal Oxide Co., Los Angeles, has been organized to manufacture metal specialties, with a plant at 687 Antonio Street. M. C. Stukey, 6048 Pasadena Avenue, heads the company

The Salt Water Valley Water Users Association, Phoenix, Ariz., is planning for the installation of 60 electrically operated pumping plants in the Salt River Valley section. It is proposed to have the plants ready for operation about the middle of 1919. W. R. Elliott is manager.

The Great Western Power Co., Oroville, Cal., is considering the construction of a new hydroelectric power plant at Lake Almanor, to cost about $100,000. Headquarters are at San Francisco. Mortimer Fleishhacker is president.

The Ruhland Automobile Works, Los Angeles, has been incorporated with a capital of $25,000 to manufacture automobile parts, etc. T. F. and T. E. Ruhland and David E. Fulwider, Los Angeles, are the incorporators.

The Pacific Northwest

SEATTLE, Oct. 15.

The Columbia Iron & Welding Works, Astoria, Ore., recently purchased property which it will use in enlarging its plant. It is engaged on work for ships being built for the Emergency Fleet Corporation.

The Seattle Machine Works, 251 Holly Street, will build a blacksmith shop and boiler room, 41 x 60 ft., to cost, without equipment about $5,000.

The Pacific Steel & Boiler Co., Tacoma, has completed 100 boilers for the Government and is now working on its second contract, and will deliver 20 boilers per month. It employs

350 men and has a main building 150 x 325 ft. and machine shop, 50 x 100 ft. O. T. Nelson is in charge of production.

The mill of the Western Lumber Co., East St. Johns, Ore., was recently totally destroyed by fire, with a loss estimated at $40,000.

The Bolter Up Machine Company, Vancouver, Wash., organized to manufacture a device for tightening bolts, recently established a plant at 308 Fifteenth Street.

The Reliance Wire & Iron Works, Portland, Ore., which recently consolidated with the Northwest Fence & Supply Co., will move its machinery to the three-story brick building now occupied by the Northwest Fence & Supply Co., corner of East Oak Street and Union Avenue. The consolidated companies will engage on a large scale in the manufacture of wire and iron work for ship construction.

The Todd Drydocks, Inc., Seattle, is to erect a general shop building, 100 x 245, as one of the first units of the proposed new plant on Harbor Island. The structure will cost $15,000.

The Brauer-Weisenborn Engine Co., Seattle, has been incorporated with a capital of $1,000,000 by A. Brauer, G. P. Weisenborn, J. H. Ganzel, Henry Zumberge and J. H. Kugler.

The Government will not permit the Foundation Shipbuilding Co., Portland, to accept further contracts for ships for the French Government, but will use the company's 10 ways at Portland and 12 it controls on Puget Sound exclusively for vessels for the Emergency Fleet Corporation. The Portland yard has launched 15 ships and has five more on the ways at present.

The Great Northern Concrete Shipbuilding Co., Vancouver, Wash., has commenced the construction of its first concrete vessel.

The Northwest Steel Co., Portland, has let a contract for the construction for a new dock and the machinery for outfitting ships, at a contract price of $35,000.

Government Purchases

WASHINGTON, Oct. 21.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, as follows: Schedule 6388½, Puget Sound, machine tools; 6389½, Norfolk and Puget Sound, 2 scarfing machines; 6390½, Charleston, 2 sensitive drills; 6393½, Puget Sound, 1 sheet metal cutter; 6397½, San Francisco, machine tools, etc.; 6398½, Alexandria, Va., 2 grinding machines; 6399½, Philadelphia, 1 screw slotter; 6472½, Washington, 2 molding machines; 6475½, Norfolk, 1 foundry mixer; 6484½, Puget Sound, 1 pipe bending press; 6496½, Washington, squaring shears; 6497½, Washington, 4 traveling cranes; 6499½, Paris Island, swing drill; 6500½, Hingham, Mass., toolroom grinders and lathes; 6502½, Norfolk, bevel shear; 6505½, Norfolk, 3 bench lathes; 6507½, Norfolk, 1 pipe bending machine; 6510½, Puget Sound, 1 vertical boring mill machine; 6511½, 2 belt-driven planers; 6522½, Norfolk, 41 heavy engine lathes.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, for supplies for the navy service as follows:

Oct. 4

Schedule 5840½, Steam Engineering

Class 786, Brooklyn—Engine lathe—Bid 26, $3,599; 93, $3,146.40; 160, $2,928; 184, $2,835; 186, $2,660; 227, $3,350; 267, $2,962; 201, $4,045.

Class 787, Brooklyn—Engine lathe—Bid 72, $580.50; 93, $1,236; 160, $1,387; 184, $910; 186, $1,245 part; 201, $1,035, $1,269; 318, $1,130.

Class 788, Brooklyn—Planer—Bid 72, $6,164; 160, $7,336; 186, $4,050 part; 201, $6,140, $7,110.

Schedule 5899½, Steam Engineering

Class 942, Boston—Lathes—Bid 93, $3,932.80; 186, $4,368; 201, $3,420.70, $3,454.52; 160, $4,586.

Class 943, Boston — Shapers — Bid 186, $3,284.30; 201, $2,618.70, $2,608.02; 160, $4,324.

Class 944, Boston—Drill presses and motor spare parts—Bid 126, $961, $1,340; 186, $1,434; 201, $4,763.20.

Class 945, Boston—Grinders and motor spare parts—Bid 60, part, $596, item 4, part, and $580, part, item 4; 315, $608; 160, $667.20.

Schedule 5952½, Steam Engineering

Class 982, Philadelphia—Universal milling machine—Bid 37, $2,740.15; 319, $3,471.

Schedule 5936½, Construction and Repair

Class 985, Norfolk—Grinders—Bid 176, $318 and $411.

Schedule 5979½, Ordnance

Class 993, Brooklyn—Bench lathes—Bid 223, $1,890.50 and $1,868; 201, $1,774 and $1,754.

Schedule 5981½, Ordnance

Class 1048, Brooklyn—Universal milling machine—Bid 37, $5,454.25.

Oct. 7.

Schedule 5694½, Ordnance

Class 665, South Charleston—3 planing machines—Bid 34, $301,000 and $160,000; 186, $150,165.

Class 759, Puget Sound—Reversible planer—Bid 34, $29,100; 151, $2,203.

Class 762, Puget Sound—Turret lathes—Bid 196, $4,572 and $4,250.

Schedule 5910½, Steam Engineering

Class 951, Bid A, delivery Mare Island—Horizontal boring, milling and drilling machines—Bid 151, $21,358; 186, $11,180.

Bid B, delivery f.o.b. works—Bid 151, $20,350; 186, $10,580.

Schedule 5953½, Ordnance

Class 979, Washington—Gang drills—Bid 5, $1,205 and $1,510; 126, $765; 151, $1,276.50; 163, $1,133.50; 160, $727; 255, $1,657.

Schedule 5951½, Steam Engineering

Class 1021, Brooklyn—1 engine lathe, boxed for ocean shipment—Bid 93, $1,201; 184, $1,351; 127, $2,256; 186, $1,826; 160, $1,921; 201, $1,430 and $1,463.

Schedule 5879½, Steam Engineering

Class 1055, Marine base, Connecticut—1 horizontal boring, milling and drilling machine—Bid 86, $7,332; 151, $5,840; 164, $6,095; 172, $5,499; 186, $7,580 and $8,030; 201, $2,485; 160, $6,660; 255, $5,795.

Schedule 5877½, Medicine and Surgery

Class 1168, Naval Hospital, Chelsea, Mass.—1 engine lathe—Bid 93, $1,014; 184, $1,285; 186, $1,615; 201, $1,250; 212, $1,893; 160, $1,749.

Class 1169, Chelsea—1 shaping machine—Bid 93, $1,271; 199, $1,655; 201, $1,010; 212, $1,651; 226, $1,230; 160, $1,122.

Class 1170, Chelsea—1 upright drill—Bid 126, $1,039; 186, $985; 201, $765; 212, $1,331; 160, $1,257.

Schedule 6033½, Steam Engineering

Class 1264, 1 horizontal milling machine—Bid A, delivery Puget Sound—Bid 143, $17,585; 186, $33,450.

Bid B, Do, f.o.b. works—Bid 143, $16,500; 199, $31,500.

Schedule 6146½, Steam Engineering

Class 1265, 1 traveling head shaper—Bid A, Puget Sound—Bid 160, $1,910.

Bid B, f.o.b. works—Bid 186, $11,200; 160, $10,366.

Schedule 6035½, Steam Engineering

Class 1276, Charleston—1 engine lathe and spares—Bid 151, $1,956.50 and $1,651; 184, $1,735; 160, $2,682.

Oct. 8.

Schedule 5943½, Steam Engineering

Class 987, Brooklyn—Drill press, 2 sets taps and dies—Bid 56, $597.50 part; 201, $740 part; 126, $572 part.

Class 988, Brooklyn—Portable drill and 2 sets carbon brushes—Bid 56, $78.50; 201, $80.50.

Class 989, Brooklyn—Engine lathe—Bid 201, $2,285.50 and $2,262.45.

Class 990, Brooklyn—1 lathe—Bid 56, $1,046.50; 223, $1,737.85; 118, $1,164.40 and $1,239.25.

Class 991, Brooklyn — 1 buffer and grinder—Bid 56, $134.40; 201, $95.50.

Class 992, Brooklyn—3 sets taps and dies—No bid.

Schedule 5878½, Steam Engineering

Class 1009, Hampton Roads—1 shaper—Bid 8, $774; 39, $714.57; 56, $489; 201, $590; 74, $950; 81, $700; 98, $664 and $796, 110, $1,384.68; 120, $1,010; 124, $188.46.

Class 1010, Hampton Roads—1 borer—Bid 8, $578; 39, $563.18; 56, $449; 201, $460; 74, $760; 124, $152.14 part.

Schedule 5781½, Ordnance

Class 1162, Newport—Engine lathes—Bid 186, $1,435.

The names of the bidders and the numbers under which they are designated in the above list are as follows: 5, Aumen Machinery Co.; 8, American Wood Working Machinery Co.; 26, Bridgeford Machine Tool Works; 34, Bethlehem Steel Co.; 37, Brown & Sharpe Mfg. Co.; 39, J. A. Fay & Egan Co.; 56, Kemp Machinery Co.; 60, Cincinnati Electrical Tool Co.; 72, W. F. Davis Machine Tool Co.; 74, Oliver Machinery Co.; 81, P. Pryibil Machine Co.; 86, Dale-Brewster Machinery Co.; 93, Fairbanks Co.; 98, H. B. Smith Machine Co.; 110, S. A. Woods Machine Co.; 118, Elgin Tool Co.; 120, Hall & Brown Wood Working Machine Co.; 124, Mechanical Appliance Co.; 126, Hoefer Mfg. Co.; 127, National Lathe Co.; 143, Ingersoll Milling Machine Co.; 160, Manning, Maxwell & Moore, Inc.; 163, Leland-Gifford Co.; 164, Lynd-Farquhar Co.; 172, Monarch Machinery Co.; 176, Mummert-Dixon Co.; 177, Monarch Machine Tool Co.; 184, Monarch Machine Tool Co.; 186, Niles-Bement-Pond Co.; 196, National Acme Co.; 201, D. Nast Machinery Co.; 212, Henry Prentiss & Co. Inc.; 223, Rivett Lathe & Grinder Co.; 226, Potter & Johnston Machine Co.; 227, Rahn-Larmon Co.; 255, Sherritt & Stoer Co.; 267, Whitcomb-Blaisdell Machine Tool Co.; 318, Rockford Lathe & Drill Co.; 319, W. F. Shipley Machinery Co.

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